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Original Articles

SMOKE IN RELATION TO HEALTH.*

A. JACOBI, M.D., LL.D.

NEW YORK CITY.

Up to the year 1000 the German home had its fireplace in the center. The smoke escaped through a big hole above, which was covered by a second roof that kept the rain out. Light got in as best it could. The Westphalian home in which I was born was still of that kind, like a hundred thousand other North German peasant dwellings. In the oldest times a few holes were also cut into the sides of the house. My people, however, had small glass windows, but then I was born in 1830—after Christ, you know. Wood and peat were exclusively used until the end of the twelfth century; coal is mentioned. The first information comes from Lüttich (Liège). In the fourteenth century coal was used in Aix-la-Chapelle; in 1429, about the river Saar. Since that time, but never like the present, was the air filled with carbon dioxid, sulphurous acid, sulphuric acid, hydrochloric acid, and sulphid of hydrogen. An equal annoyance, if not danger, is caused by the unconsumed soot.[1]

Dr. Charles A. L. Reed, chairman of the Committee on Medical Legislation of the American Medical Association, delivered an address[2] on the subject of smoke before the Woman's Club of Cincinnati. On that occasion the medical aspect of the question was not emphasized. But smoke-filled air imposes extra and unnecessary drudgery on the housekeeper. Woman's privilege to wear clean clothing is ruthlessly disregarded by the makers of smoke and the permitting municipalities. Women should, therefore, individually and through their organizations, protest vigorously against the present conditions. Moral dirt also is closely united to physical dirt, and a clean community has the better chance to avoid degeneracy.

The ill conditions are national and not local, so that something more than local effort is needed to combat them. Therefore, he proposes cooperation, national in extent, to create public sentiment, to determine the facts and adjust conflicting interests, to demonstrate plans and appliances for smoke prevention, and to formulate a standard law to secure uniform regulation of the evil all over the country. He suggested a national "anti-smoke convention" to execute these plans, this convention to be really representative of all concerned interests, and to be instructed by competent specialists, engineers, physicians, sanitarians, manufacturers, attorneys and others. The assistance of the press must be secured.

Such is also the opinion expressed in an editorial of THE JOURNAL of the American Medical Association, May 20, 1905, which, moreover, expresses its categoric opinion that "the crusade against unnecessary city smoke is more social than medical, and yet has a real interest for physicians. The direct harmfulness of smoke to the human organism is not wholly clear." Thus THE JOURNAL claims or admits that smoke and other products of soft coal semi-combustion vitiate the atmosphere, depress the organism, injure the integuments, cause deficient oxygenization and edemia, mainly among children, and oblige people to seek the country.

It is time we should drop the idea that the smoke question is only social and not medical. If that were so the natural sciences would have little to do with it, and not even the law of the land or of esthetics could ever reach it.

I have availed myself of some opportunities to inquire from medical friends in Pittsburg, Cincinnati and Chicago whether in their knowledge clinical statistics, autopsies or other experience have been gathered with a view of enlightening the medical profession on the smoke nuisance in its sanitary aspects. Only from that point of view can we hope to aid in ridding the community of an anomaly created by the recklessness of modern industry, which is always willing to coin gold out of human corpses of its own making.

Now it happens that THE JOURNAL of the American Medical Association, July 7, 1906, arrives at the conclusion, based in part on Ascher's statistics and experiments, that the fighting of the smoke nuisance "should be made part of the general plan of the campaign now in progress against tuberculosis and pneumonia." Since that time the Philadelphia County Medical Society has discussed the problem in its meeting of June 27, 1906, in which Drs. J. Madison Taylor, W. M. L. Coplin, C. G. Grayson, L. Webster Fox and Henry Leffmann took part. That the nose, throat and eyes are directly injured by smoke was admitted beyond doubt, but whether the presence of soot in human lungs is an indifferent matter or an injury was left undecided. It must have pleased the sinning part of the industrial world to hear from a participant in an unprepared and unguaranteed professional, if not medical, discussion the statement that there is little evidence to show that "the presence of smoke in the air increases especially"—what, if you please, is especially?—"the morbidity or mortality of a community."[3] Dr. Henry Leffmann also spoke of the practicability of preventing the smoke nuisance.

* Read in the Section on Hygiene and Sanitary Science of the American Medical Association, Atlantic City, June, 1907.

1. While this paper was awaiting publication, Dr. Theodore W. Schaefer had an elaborate essay full of quotations and suggestions in the Boston Medical and Surgical Journal, July 25, 1907, on "The Contamination of Air with Sulphur-Dioxid." London, according to his statements, burns 30,000 tons of coal daily, which gives rise to 300 tons of soot and large quantities of carbon dioxid and sulphur dioxid. This last named gas is converted into sulphuric acid, twenty tons of which are annually brought down in the rain falling in the cities of Glasgow or in Manchester. It owes its origin to the iron pyrites which form 3 per cent. of the coal. When 40 parts of the acid are contained in one million parts of air the vegetation suffers intensely, and the lungs of men—?

2. Amer. Med., April 29, 1905.

3. THE JOURNAL A. M. A., Aug. 4, 1906.

The sixty-sixth annual report of the registrar general of England demonstrates an increase of the mortality depending on bronchitis and pneumonia in England until the quinquennium of 1891-1895, and a considerable decrease since. In connection with the latter fact L. W. Chubb[4] observes that eighty cities—London, Liverpool, Manchester, Sheffield, etc.—report a decrease of smoke since that time. Brodie, the meteorologist, points to the diminution of London fog which is occasioned by the absorption of atmospheric water by sulphur dioxid with its specific gravity of 2.25. His colleague, Rollo Russel, reports a marked effect of the compulsory prohibition by law of smoke.

According to Mr. James River, the medical officer of Manchester, the fog days and the mortality from acute pulmonary diseases have become less. There were in Manchester during each of the five years from 1896 to 1900, inclusive, 36.8 fog days; in the five years from 1901 to 1905, inclusive, 23.4; and of 1,000 deaths there were in the former quinquennium, among all ages, 5.04 per cent., in the second 4.28 per cent.; among infants under 1 year 33.53 and 31.10 deaths, respectively. In the same report Primrose[5] publishes the results of investigations made in Glasgow on rain, which prove the decrease both of acids and of soot.[6]

His method of a chemical examination of the atmosphere resembles that which W. L. Russell followed in London and Angus Smith before him.[7] After them J. B. Cohen, the professor of organic chemistry in Leeds, suggested an efficient, mostly new, examination both of the rain and the air, in a book of his own: The Air of Towns, reprinted from the Smithsonian Reports of 1895, Washington.

The experience gathered in England has suggested a number of rules which are vigorously enforced in a number of towns. In London and Manchester no factory chimney may expel a black smoke for more than a minute every hour. In Professor Harvey Littlejohn's report on the causes and prevention of smoke from manufacturing chimneys (city of Sheffield, 1897) are enumerated twenty-two cities which enforce a duration of not more than from one to fifteen minutes in which black smoke may be expelled each hour. Dr. Councilman tells me that the new buildings of the Harvard Medical School do not suffer from smoke at all. In all those reports the important factor of the chimneys of private houses and open fireplaces, however, is not brought into consideration. Altogether, however, the common law declares the expulsion of smoke from chimneys to be a nuisance.

The public health act of 1875, section 91, subsection 7, which is valid for England with the exception of London and a few other cities that have local regulations of their own, demands, however, that the smoke of factories must be consumed as much as practicable by means of the ever improving technical discoveries and inventions, in the following words: "That such fireplace or furnace is constructed in such a manner as to consume as far as practicable (having regard to the nature of the manufacture or trade) all smoke arising therefrom, and that such fireplace or furnace has been carefully attended to by the person having the charge thereof."

The official work of the health boards has been aided by a number of coal smoke abatement societies in London and elsewhere, which employ their own watchers and inspectors alongside those employed by the government. It will not take very long before many manufacturers and engineers cease to object to the compulsory avoidance of smoke, on account of the acknowledged economic advantage due to a saving of coal.

That coal will be replaced by gas, which burns without smoke, appears more probable from year to year. Even we in America, who are notoriously slow in adopting sanitary measures, even theoretically, begin to replace coal by gas for domestic purposes. A cheap gas may be and has been manufactured in South Staffordshire and in London, which, while not fit for illumination, is perfectly so for developing smokeless heat.

In a presidential address before a conference on smoke abatement, during 1906, Sir Oliver Lodge admonished his audience directly not to permit the combustion in cities of coal, but to insist instead on the regular preparation of cheap gas. I am afraid we in America have been too slow even to utilize natural gas as we should have done.

In a book on the influence of smoke on the respiratory organs (Stuttgart, 1905) Dr. Louis Ascher arrives at the following conclusions: Since 1875 acute inflammations of the respiratory organs have increased in Germany, England and America.[8] This increase was studied in a possible connection with the diminution of the power of resistance and with possible climatic or infectious causes. Neither of these factors could be charged with producing the increase of acute inflammatory respiratory ailments.

Carefully collected facts prove a higher mortality from these diseases both in towns and country, in the regions of the Rhine and in Silesia, where much smoke is produced. That is mainly so in the coal mines of the Ruhr river district in Westphalia. Here, where the air is always black, the mortality from inflammatory respiratory diseases among men is greater by 135 per cent. than among the Prussian males of equal age; of those so suffering the majority were those born in that region; the minority consisted of such as had come from distant country districts. Altogether it appears statistically certain that smoke causes a disposition for acute pulmonary diseases and accelerates the course of pulmonary tuberculosis.

It was also found that in a humid atmosphere coal dust was aspirated in larger quantities and in less time than in dry weather. Tubercular animals that were made to inhale moderate quantities of smoke through a period of ten hours died sooner than those which inhaled less of it. The question whether the inhalation of a moderate amount of smoke causes a disposition for acute respiratory inflammations had to be answered affirmatively, for inhalation of smoke followed by that of aspergillus accelerated the causation of inflammation, when compared with the animals not so exposed to the fungus.

Further and final conclusions are as follows: The mortality from acute inflammatory pulmonary diseases is on the increase, mainly that of children and old people. The cause is to be sought for in the contamination of the atmosphere by smoke. In industrial districts the mortality of nurslings was six times larger than in agricultural communities. It was found that dense smoke districts had a larger mortality than other industrial centers, for instance, the textile industries. The mor-

4. Report on returns by local authorities with regard to the carrying out of their powers and duties in the matter of smoke abatement, London, 1905, Conference on Smoke Abatement.

5. A plea for a systematic comparative analysis of the air in towns.

6. Ascher (L.): The Fight Against Smoke in England and Germany, D. Vierteli. f. öff. Ges., xxxix, 2, 1907.

7. Monthly weather report for April, 1884, London, 1884.

8. Klebs: Amer. Med., vi, No. 24.

tality of coal miners surpasses that of the rest of the male population by 130 per cent.; the indigenous suffer more than the immigrant workmen. Animals infected with aspergillus without having been previously exposed to smoke inhalation did not contract pneumonia like those which were forced to inhale smoke.

Bartel and Neumann, in their work on experimental inhalation tuberculosis of the guinea-pig,[9] found that such guinea-pigs as had inhaled a moderate amount of smoke on account of their being kept in a large city died of pulmonary tuberculosis in less time than those which showed smoke-free lungs.

A serio-comic contrast is furnished by the opinions of those who assert that soot in the lungs prevents tuberculosis. On that theory the metal grinders of Sheffield had until twenty-five years ago the habit of going into places filled with coal dust after having been in metal dust all day. What was called "grinder's asthma" was and is tuberculosis. There were few that escaped. I understand the use of respirators is not common even to-day. If here and there little tuberculosis is found it is because very strong and healthy persons are preferred for that kind of work. But even M. Mendelsohn[10] met many persons dying of tuberculosis whose symptoms never showed themselves until they worked in coal dust and smoke.

By what road will smoke and coal dust get into the lungs? Its invasion may be either by inhalation or by the absorption from the intestinal tract and the lymph apparatus. Dr. Julius Arnold, professor of pathologic anatomy in Heidelberg, wrote a classical book in 1885 with the title: Researches on Dust Inhalation and Dust Metastasis. He admits the presence of carbon during his experiments, in the interior of the intestinal tract, but never in the wall of the tract or in the chyle vessels and mesenteric glands except in rare instances when a few stained cells only might be found in the tissue of the intestine and in the mesenteric glands. Villaret had suggested, in 1862, the probability of an intestinal origin of pulmonary anthracosis, but Arnold's results were too positive to be denied. It appears, however, that the frequent recent discussions in reference to the invasion of pulmonary tuberculosis, either by inhalation or by deglutition, tempted Vansteenberge and Grysez[11] to resume experiments relating to the same subject. They watched the progress of coloring matter introduced into the intestinal canal and the peritoneum. Contrary to what is known to be a fact, viz., that granular material circulating in the blood passes the lungs and is deposited in the liver, spleen, bone marrow and the lymph bodies, they asserted to have found that coloring material passed from the intestinal tract and the peritoneum through the lymph circulation into the lungs as a copious deposit. They met with this affirmative result preferably in adult animals, overlooking perhaps the fact that a certain degree of anthracosis is noticed in every animal that has passed its life in contaminated city air, but not in the very young, simply because the latter has not respired so long.

So Aschoff,[12] W. H. Schulze,[13] Mironesco,[14] M. Cohn[15] and finally a few weeks ago H. Beitzke[16] have demonstrated that Chinese ink, introduced into the abdominal cavity, is absorbed into the lymph ducts of the mesenteric lymph bodies and of the diaphragm, the sub- and supra-diaphragmatic glands, the thoracic duct, the vena mammaria interna and the blood. From here it enters the bone marrow, the spleen, the liver, but not the lungs. These experiments were very numerous and their results uniform. All of which proves that anthracosis of the lungs is directly caused by inhalation, and that smoke enters the lungs directly from the contaminated atmosphere, either through the mouth or through the nostrils, which exert their protecting influence to an insufficient extent only.

Meanwhile Section 96 of the Sanitary Code of the New York Health Department, in consequence of a decision "handed down" by Mr. Justice Dickey of the Supreme Court, has been emasculated so as to read:

"The owners, lessees, tenants, occupants and managers of every building, vessel and place in or on which a locomotive or stationary engine, furnace or boilers are used, shall cause all ashes, cinders, rubbish, dirt and refuse to be removed to some proper place, so that same shall not accumulate; nor shall any person cause, suffer or allow smoke, cinders, dust, gas, steam or offensive or noisome odors to escape or be discharged from any such building, vessel or place to the detriment or annoyance of any person or persons not being therein or thereon engaged."

No summary arrests of the evil doers are permitted. Civil actions for the penalty of $250 only are allowed, under Section 1262 of the Greater New York Charter; it takes a delay of one month in the issuing of an order to arrest a violator, during all of which time the nuisance continues and the public suffers; when the same is finally abated the public enemy suffers absolutely no penalty whatsoever and pays merely the few dollars costs of bringing the action to the corporation counsel.

As usual, the laws appear to be made to protect not the people but their enemies.

9. Wien. klin. Wochschr., 1906, Nos. 7 and 8.
10. Traumatic phthisis, Berlin, 1885.
11. Intestinal Origin of Pulmonary Tuberculosis. Ann. Pasteur, xii, 1905.
12. Beitr. Z. Klinik der Tuberculose, Vol. 6.
13. Münch. med. Wochschr., 1906, xxxv.
14. Soc. Biolog., 61, No. 27.
15. Berl. klin. Wochschr., 1906, No. 14.
16. Virch. Arch., 1907, 187.

EDUCATIONAL METHODS IN THE CAMPAIGN AGAINST TUBERCULOSIS.*

LIVINGSTON FARRAND,
NEW YORK CITY.

Fortunately for the initial enthusiasm with which a campaign for the prevention of tuberculosis may be undertaken by any community, there is no difference of opinion as to what the chief task may be. It is the education of the public with regard to a few simple facts. The accomplishment of that task, however, is one which calls for all the ingenuity and skill that expert knowledge can furnish or specific experience can teach.

The organized crusade now under way against this disease is rapidly uncovering the conditions which constitute its stronghold and, while opening up innumerable lines of promising attack, is also making more and more clear the baffling complexity of the work in which we are engaged.

We may start, I presume, with the general proposition that tuberculosis is infectious, that it is preventable and that in its early stages it is curable. It is its preventability which justifies the expenditure of energy now devoted to the campaign and will justify the immensely greater expenditure which will certainly be called for

* Read in the Section on Hygiene and Sanitary Science of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

in the immediate future. If we are to prevent we must necessarily deal with the conditions which cause, and those especially subject to such conditions will form the classes most necessary to reach.

These conditions are, of course, pre-eminently those of the overworked and the badly nourished, of the badly housed and of those who are totally ignorant of the simplest rules of a proper hygiene; of those to whom a higher standard of living may be vaguely desirable as a material or social comfort but not a realized duty to self or to family. Our task then is to carry to these classes, by every possible method, not only a knowledge of the facts, but appreciation of the necessity of action.

The experience of the last few years has shown that to reach results in any community organization is necessary. This is true not only to avoid needless waste of energy and resource, but to insure an effective covering of the field of operation.

The conditions existing in the cities and towns of the United States are so varied that it is impossible to lay down any rule or scheme of organization which will apply to all cases. In certain communities the work can best be undertaken by some existing philanthropic or other organization, while in others it is better for a new society to organize on an independent basis. It is nearly always true that the starting point for effective work is the devoted enthusiasm of some one man or woman who has the gift of communicating this enthusiasm to others of his or her type.

One general postulate can, I think, be laid down, and that is the necessity of cooperation between the medical profession and the laity. This is applicable to all localities. An educational campaign planned and conducted by physicians alone invariably remains dignified and ethical and entirely inefficient, while a crusade by laymen without medical cooperation lacks the authority and conviction which only expert knowledge and the confidence borne of it can provide in any movement connected with disease.

With an organization reached, a definite program of operation is imperative. Here also no great difficulty should be encountered. The main points are:

1. Cooperation with the public health authorities and with all organized movements which can contribute in any way to the diminution of tuberculosis.

2. Agitation for the passage and enforcement of proper legislation, e. g., registration of tuberculosis, anti-spitting ordinances, adequate disinfection, etc.

3. Initiation and prosecution of movements for the establishment of adequate hospital, sanatorium and dispensary facilities for the care of the tuberculous.

4. The education of the public with regard to the facts of the disease.

It is this last item which, brief as is its statement, calls for the real persistence and energy in the campaign.

The means of education are varied and can best be discussed under separate heads.

LITERATURE.

The preparation and distribution of suitable literature take, for some reasons, the leading place. Here the first point of consideration is the character of the groups to be reached. There is not, and never will be, any leaflet, pamphlet or book adapted to all types.

(a) Always necessary is some short, pithy, striking statement which can be printed in inexpensive form, preferably on one or two pages, and distributed freely. The preparation of such material affords scope for all the literary, advertising or other ability available in a society. There are now in existence a large number of such leaflets prepared by the various local associations, and each one regards its own as the best. Whatever the wording, the form should be striking and the material durable. Red ink and cardboard are distinct assets and colloquial English is far better than polished rhetoric.

(b) There is also need of a statement somewhat more extended in form which shall give in greater detail the reasons for caution, the principles of hygienic living, rules for consumptives and those living with them, and specific instruction in compact form with regard to everyday life, necessity of medical care, disinfection, etc. This can be best put out in pamphlet form and preferably of a size that can be easily placed in the pocket.

(c) Of more elaborate general books there are a number more or less well adapted to their purposes. There is now under consideration the preparation of a handbook somewhat after the form of that issued by the Charity Organization Society of New York, which shall be written by recognized authorities and issued by the National Association.

(d) Literature for special classes of the community, such as teachers, school children, workers in special trades, etc., is increasing in amount and by constant revision by various committees is gradually adapting itself to its end.

Translations into the many languages spoken in the United States is, of course, an absolute necessity in many communities and does not present any great obstacle. The need of translation is naturally greatest for the small cards and leaflets intended for those of slender education, but they are precisely the ones for whom the information is imperative.

EXHIBITION.

In casting about for new and effective methods of educating the public the exhibition was selected and has proved probably the most valuable single method at our disposal. This is an effort to show in graphic form the same simple facts that the literature mentioned above sets forth. We may as well recognize the truth that the majority of people will not read but will look at a "show" (particularly if it be free), and as a consequence thousands are reached by the exhibition who would never be touched by the printed page.

It is impossible to specify in detail the material available for exhibition purposes, but it can readily be grouped in one of several ways. There should be:

(1) A demonstration of conditions. This can be done by maps and charts setting forth the prevalence of tuberculosis in the United States, in the given states and cities, in different trades, races, etc. Valuable maps and charts for reproduction and enlargement may be found in the admirable paper by Miss Brandt, in the Handbook on Tuberculosis published by the Charity Organization Society of New York City in 1903. The attention of the public can often be caught also by a striking statement of the economic loss to the country or community by the deaths from this disease.

(2) The infectious character of tuberculosis and the conditions which cause it can be shown by pathologic specimens or by colored plates, charts and photographs. More stress, however, should be laid on the housing, social and industrial conditions which favor infection, and here a wide field is open. Enlarged photographs of local conditions may be utilized and will always attract attention, but with the views of dark unventilated homes and workshops and unhealthy environment should always.

if possible, be shown what can be accomplished under similar conditions by hygienic treatment. This phase of the subject shades into

(3) Prevention. Here should come in views of model tenements, playgrounds, the work of various organizations for the betterment of social conditions, the results of proper health regulations, anti-spitting ordinances and the various methods that have been found effective in communities where the campaign has already been undertaken.

Exhibits of the literature and results of successful antituberculosis organizations will prove stimulating and effective.

(4) Treatment and Cure. This aspect is capable of more effective exhibition than any other. Photographs and models of sanatoria, open-air sleeping shacks, tents, etc., may be utilized to whatever extent is deemed desirable. It should always be remembered in this connection that it is the human side which appeals and that the average man, woman or child will notice with interest pictures of patients where ground plans or elevations of buildings will be passed by without attention. Striking photographs of patients' outdoor life in winter, treatment on roofs where better facilities are not available, and other phases of the subject will be found desirable.

There should always be some statement of the evils of "patent medicines" so exhibited that it can not be overlooked even by the casual visitor. A large sign containing some specially drawn-up resolution of a local medical body or some other group of authority is perhaps the easiest method of covering this point. A statement of the ingredients of the patent medicines most in favor in a given community would also invariably prove effective.

In connection with the exhibitions there should be as many lectures or public talks as can be arranged, and more important than all are the informal demonstrations and explanations to groups of visitors by volunteer assistants, young physicians or students who can usually be procured for that purpose.

Lantern slides should be obtained and will do much to draw and hold the audience which it is particularly desired to attract.

Fortunately the cost of a small but effective exhibit is not great. With the facilities available in any community for the reproduction of charts, etc., and the volunteer services which can usually be counted on, the necessary models and photographs for an effective exhibit can be procured for from $100 to $200. The total cost of an exhibition which can be set up in one large room, say 30x40 feet, could probably be brought under a figure of $300. Naturally the more money available the more attractive can the material be made, and experience is showing that money so devoted is well spent.

In our largest cities it is desirable that an exhibition of fairly comprehensive scope should be made permanent and shown continuously. This is already being done in a number of places with extraordinary results.

Every state should also have an exhibition which can be readily transported and sent to the smaller towns and communities where a permanent exhibition would probably not be called for. Such a state exhibit can be formed and controlled either by a state association, where such exists, or by the board of health when that body is sufficiently advanced to appreciate its responsibility.

A most important factor in this connection is the place of exhibition. Esthetic surroundings should be sacrificed to convenience of access, and it is much better to choose a vacant store on one of the busiest streets of a city than the imposing rooms of a public library or museum which can often be more easily obtained.

It can be laid down as a truth that the effect of an exhibition is measured by the degree of its publicity. This can best be accomplished by placing the exhibit in such a situation that it can not be overlooked.

LECTURES AND MEETINGS.

The third method of education of importance comparable to the two already discussed is that of the public lecture. Possibly this should logically take precedence of literature and exhibition. In small communities it is often not only the easiest to arrange, but the quickest in its results. The real difficulty in this connection is in procuring enough speakers of force and effectiveness to insure a systematic series of meetings. It is too often the case that intense interest in this work will be aroused for a single evening or a single week and then be allowed to lapse for lack of organized plan and persistent energy. Where effective medical men can be secured for public lectures they should always be utilized. The authority with which they speak impresses the public in a way which the enthusiasm of a layman can never rival.

A systematic division of any community into groups for the purposes of public lectures is not only desirable but necessary. Special talks adapted to special classes should be arranged and a definite plan followed during the year. The school teachers, school children, churches, women's clubs, Y. M. C. A.'s and, above all, the trades unions, should be met and the facts concerning tuberculosis in their relation to the particular conditions of the group in question presented in a clear and effective way. This is often, of course, difficult to provide for, but none the less a necessity.

If a systematic campaign of public meetings, public exhibitions and persistent circulation of selected literature be carried through in any except our very largest cities it will be found possible to reach practically every individual.

It was said a moment ago that the effect of an exhibition is measured by the amount of publicity attending it. This statement could also be made of all the methods which are employed or can be devised. It is, therefore, of prime importance that the cooperation of the public press should be secured in all cases. Fortunately this is seldom a difficult matter. The newspapers will print whatever the public demands, and with the interest in tuberculosis which is now manifesting itself in every center the difficulty is not to procure publication of prepared articles, but to prepare articles of a suitable character.

An experiment tried this last year by the New York committee of sending regularly each week to a long list of newspapers throughout the state a short article on tuberculosis and its prevention has proven unexpectedly successful. A large number of these papers have welcomed the contribution and have joined in the campaign with encouraging enthusiasm. There is no reason except that of expense why this plan should not be extended until it includes all the cities of the Union.

Every now and then a novel method of reaching the public is discovered in some one community and becomes available for others.

A little over a year ago in Yonkers, where a most in-

telligent and resourceful campaign has been carried on for the last two years, the committee in charge hit on the plan of an open-air stereopticon exhibition. Slides were prepared which contained pithy sentences regarding tuberculosis, its infectious character, methods of prevention, pointed advice, etc. During the summer months, in an open-air square in the city, evening exhibitions were regularly held and crowds of people gathered and were not only entertained but instructed by the views thrown on a wall adapted to the purpose. Views and scenes of general interest are shown and interspersed between the tuberculosis slides.

The idea was taken up by the New York Board of Health, and last summer it was employed with great success in some of the smaller public parks in the crowded quarters of the city. The dwellers in the tenements gathered by thousands, and while interested and amused, were at the same time given wholesome information and instruction.

This same resourceful committee of Yonkers has also obtained permission to place notices on all the telegraph and telephone poles in the city, a plan which could probably be followed in many of our communities. A full report of the methods employed in that city was presented at the last meeting of the National Association for the Study and Prevention of Tuberculosis and will soon appear in type.

Another admirable device is that employed by the New York committee through the courtesy of one of the largest commercial houses in the city which owns the advertising rights on the backs of street car transfers. On certain days this firm has allowed the committee the space, and on the backs of all transfers issued on that day appears a statement regarding tuberculosis and its prevention.

Since the object of the campaign is publicity, concentration of effort is often desirable, and in one or two cities it has been found possible to gain the cooperation of practically all the churches of the community so that the subject of tuberculosis and its prevention can be presented to the congregations on a given Sunday. This requires some preliminary negotiations, but where it can be carried out insures not only an immense audience but still greater publicity through the press reports which will invariably be given on the following Monday.

A short time ago in Providence, R. I., a meeting was called which may possibly be more fruitful in its effects than any other attempt thus far made. Through the energy of one or two individuals deeply interested in the crusade representatives of a large number of manufacturing companies met and formally discussed what the employer could do to prevent tuberculosis among his employés. While it is too soon to forecast the results of this meeting, yet as a symptom of awakening responsibility its importance can not be overestimated. We recognize that it is in the home and shops where the bulk of our people live and work that tuberculosis has its stronghold, and if we can gain in this crusade an intelligent cooperation of labor and capital an enormous advance will have been made.

It is impossible to rehearse in detail the methods which have been found effective in this campaign of ours. We are still in the experimental stage and each day realize more clearly the magnitude of the task which is presented.

With the number of organizations now in existence and constantly being formed in all parts of the country, new lines of attack are being uncovered and new methods devised which are applicable to other centers than those in which they find their origin. It is a far easier matter for a newly-formed society to take up its work promptly and efficiently to-day than it was three years ago, and the program and method is becoming clearer daily.

The National Association stands ready to cooperate with suggestion and aid to the extent of its ability, and with the extension of system and organization the efficiency of the campaign can be counted on to advance with a rapidity equal to that of the interest and enthusiasm which is making the crusade against tuberculosis the most striking aspect of the present world-wide movement in the direction of preventive medicine.

105 East Twenty-second Street.

PUBLIC PROVISION FOR ADVANCED CASES OF TUBERCULOSIS.*

EDWARD O. OTIS, M.D.
Visiting Physician at the Massachusetts State Sanatorium.
BOSTON.

From the activity now manifested in this country by state and municipal authorities and by private philanthropy it seems assured that in the near future the incipient cases of pulmonary tuberculosis will be measurably well provided for. Sanatoria for such cases are now springing up in the various states with increasing rapidity, and one can prophesy with considerable assurance from what has already been accomplished that in no distant future the majority of the states will have one or more sanatoria for incipient cases.

The outlook is not so hopeful, however, with regard to the advanced, the hopeless cases. Provision for them is sadly lacking, and yet they are the most numerous, and probably the most dangerous, to the community and to their immediate neighborhood.

"It is admitted on all hands," says Phillip,[1] "that it is the advanced or dying cases of consumption which constitute the greatest source of infection to a community. Among the poorer classes this is emphatically the case, where, it may be, one room is shared by half a dozen persons, one or more of whom may be afflicted with tuberculosis. The segregation of such cases is a most important move in preventive medicine."

If the tuberculosis crusade is to go on, and it will, adequate accommodations must be provided by the public for the advanced cases, who can not be properly or safely cared for at their homes. The dangerous consumptive must be isolated.

The problem is too vast a one to be undertaken and satisfactorily solved by private or local effort. The state and municipality (I refer more particularly to the large cities) must lend their aid and undertake the work, or at least initiate and finance the movement. It will be, moreover, an economic step on the part of the public authority from the standpoint of prevention. The state now recognizes as one of its legitimate functions the prevention of disease, not only for the welfare and protection of its people, but as an economic measure.

The time is at hand, I believe, when, through efficient compulsory notification, all cases of tuberculosis existing in town or city will be made known to the health authorities, and the next logical step is to furnish such

* Read in the Section on Hygiene and Sanitary Science of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

1. British Journal of Tuberculosis, i, p. 18.

authorities adequate accommodations for the isolation of such cases of advanced tuberculosis as, in their judgment, are a menace to the other members of the household and to the immediate community.

This, I believe, must be accomplished by state or county consumptive hospitals, or, in the case of the larger cities, by municipal hospitals of the same nature, as New York, Boston and other cities have done. As it is now such accommodations as are afforded by most cities and states—and these are very inadequate—are by the state or municipal almshouses. It is an evident injustice to the poor but worthy consumptive that he should be subjected to the stigma of pauperism simply because he is unfortunate enough to be afflicted with this disease. "Excluded from general hospitals, considered 'incurable' by most sanatoria, the advanced and dependent consumptive has practically no haven of refuge save the much dreaded workhouse infirmary."

State hospitals, in number according to the population, should be provided, and each community be assessed for a part or the whole of the maintenance of the consumptives received from its locality.

It is obviously not so important to select the sites of such hospitals with regard to the most favorable climate and situation as in the case of sanatoria. They should rather be located near the thickly-populated centers so that they may be easily accessible.

Neither is it necessary to construct them on the elaborate plan of the sanatorium. Simple one- or two-story wards, connected by a corridor with an administration building, would satisfactorily serve the purpose, for the principal object of such institutions is to isolate the consumptive and make him comfortable.

Of course some of the advanced cases will show such improvement that they can properly be given the regular open-air treatment, which can be done by either transferring them to the sanatorium or at the hospital by means of tents, shacks or piazzas, or one of the wards can be reserved for this purpose. On the other hand, cases in the sanatorium which go badly and become advanced and hopeless can be transferred to the hospitals, and thus one institution will supplement the other very much as is done by the great Brompton Hospital in London and its sanatorium at Frimley.

Large cities would naturally require one or more consumptive hospitals of their own, and the city purse is able to establish and maintain them. Boston has recently appropriated $150,000 for such an institution and it is already under way.[2] New York has done the same thing, and some other cities, I believe.

It has been urged that this problem of the care and isolation of advanced cases can be solved by adding or appropriating wards of already existing hospital plants, particularly as so many cottage hospitals have now been established throughout the country. Even if this could be done in every case, such provision would still be very inadequate to meet the requirements of the state at large, the smaller communities where no general hospital existed, the manufacturing towns, etc. And no state, I am sure, is so impecunious as to be unable to establish one or more consumptive hospitals of the inexpensive kind I have referred to, when it is borne in mind that the expenditure will eventually be returned in the saving of life, which has a money value to the state, through the removal of sources of infection.

The tuberculosis dispensary is now acknowledged to be an essential factor in the tuberculosis crusade, and should be in intimate relation with the consumptive hospital, on the one hand, as well as the sanatorium on the other. The trustees of the consumptive hospital of the city of Boston have established such a dispensary in the heart of the city which will be open evenings as well as during the day. The tuberculosis dispensary will, among other uses, serve as a clearing house from which tuberculous individuals can be directed to the proper institution or be supervised and treated at home through nurse and physician, if they so desire, and can do so, in the judgment of the health authorities, without danger to the other members of the household.

Eventually, I believe, everybody will, either of their own free will or through compulsion, undergo an examination of the lungs; and, as at present, a certificate of vaccination is required of school children and of others before entering certain occupations or assuming certain positions, so will there be a similar requirement regarding tuberculosis. And why should not this be so when one considers the prevalence of the disease and its communicability? For such examinations the municipal or public tuberculosis dispensary will naturally be the place just as the municipal vaccination depots exist for public vaccination. As Phillip says:[1] "The dispensary will constitute for every town or district the developmental center and uniting point of other agencies." It should keep a register of all tuberculosis institutions and activities: sanatoria, hospitals, infirmaries, private boarding-houses for the tuberculous in health resorts, parochial hospitals, tuberculosis associations, etc., and a list of all known cases of tuberculosis in the city or district.

In connection with state or municipal consumptive hospitals I would suggest maternity wards for tuberculous pregnant women, where, before and after their confinement, they can receive the hygienic and dietetic treatment, a suggestion made by Dr. Knopf with regard to maternity hospitals, but I think the plan could equally well be carried out in connection with the consumptive hospital. Furthermore, accommodations for tuberculous and scrofulous children might be afforded either in an annex to the consumptive hospital or sanatorium or in a separate institution, a branch of the consumptive work so well recognized and executed in France through the instrumentality of the various associations for the protection of infants and the care of tuberculous children.

The "day camp," now an established feature of the tuberculosis work, would find its proper place in the grounds of the consumptive hospital, for the hospital being situated near a thickly-settled center could be easily reached by the day camp colony. This has already been done in connection with the Boston Consumptive Hospital, which can be reached from the city by a five-cent fare.

The legislature of Massachusetts, at its session of 1906, appointed a commission "to investigate measures for the relief of consumption and sites for state hospitals for consumptives," and in their report to the present legislature the commission recommended the erection of three hospitals "which should be devoted principally to the treatment of cases in the advanced stages of the disease," and the creation of state medical inspectors "to assist both the medical profession and the laity in fighting consumption." It goes on to say:

> A law should be enacted arbitrarily dividing the state, for purposes of medical inspection, into twelve or more districts, and providing for the appointment of a physician of consid-

2. Since the above was written another considerable appropriation has been made for the completion of this object.

erable learning and experience, a resident of the district, as state medical inspector. It should be his duty to inform himself as to the prevalence of tuberculosis in the district; to devise ways and means of combating the disease; to disseminate knowledge as to the best methods of preventing its propagation; to make or cause to be made microscopic examinations of sputum, free of expense; to examine all persons in said district desiring to enter the state sanatorium at Rutland, or other tuberculosis hospitals which the state may erect; to keep a record of the dwelling-place, occupation and physical condition of all persons in said district who have been inmates of such hospitals; from time to time to forward to each hospital for consumptives a report of the condition of the persons who have been treated in said hospital; and also to perform such other duties as may be imposed on him by the State Board of Health.

These inspectors might be able to enlist the aid of philanthropic persons in establishing tuberculosis classes or day camps such as have been mentioned. They should be able at least to interest employers within their districts so as to prevent any employé suffering with tuberculosis from imperiling the lives of his fellow workmen by spitting carelessly. It is believed that if the attention of all the manufacturers is brought to the way in which the prevention and cure of tuberculosis among operatives is being carried out in Rhode Island and in a few places in this state, many others will be quite as ready to help those in their employ who are sufferers from the disease.

The state medical inspectors, in performing their various duties, will need the assistance of visiting nurses, a work which young woman not otherwise occupied will perhaps volunteer to do without expense to the state; but, if volunteer nurses are not forthcoming, then the state should employ women of some experience, under the direction of the inspectors, to visit needy patients who for any reason can not be admitted to a state hospital. Such work ought to be given to those who have recovered from the disease, because they will better understand the essential elements of the treatment.

These inspectors should keep in touch with the state institutions by frequent consultation with the trustees or superintendents. They should be responsible, however, to the State Board of Health, and should make annual reports to that board, or more frequent reports if called on; and, if the office force of that department or its appropriation are insufficient to provide for their supervision, further legislation should be enacted, in order to cover this additional expense.

The commission is strongly of the opinion that by means of state medical inspectors great good can be accomplished in the fight against tuberculosis.

These recommendations have been favorably reported on by the committee of the legislature and a bill framed appropriating $25,000 for such inspectors and $300,000 for the three consumptive hospitals, and there is every reason to believe that these bills will be shortly passed by the present legislature.[3] Thus Massachusetts will be the first state, so far as I am aware, to provide hospitals for advanced cases as she was the first to establish a state sanatorium.

CONCLUSIONS.

It is evident from the present agitation that the public is determined to control and eventually to eradicate tuberculosis, and we now possess sufficient knowledge of the disease and its prevention to intelligently work with this end in view. An efficient and complete plan for public execution in the pursuance of this object would, in my judgment, be as follows:

1. Compulsory registration and disinfection.
2. Free examination of sputum.
3. State or municipal law against promiscuous spitting.
4. Sanatoria for incipient cases.
5. Hospitals for advanced cases, with maternity wards for tuberculous pregnant women.
6. Tuberculosis dispensaries.
7. Farm colonies for those discharged from the sanatoria.
8. Sanatoria or hospitals for tuberculous and scrofulous children, preferably situated on the sea-shore, as France, England and other countries have done.
9. Efficient school inspection by physician and nurse with special reference to tuberculosis.
10. Factory and workshop inspection with the same purpose in view.

The majority of these measures are already in operation in a number of cities and states. None is more urgent or will contribute more to prevention than consumptive hospitals with sufficient accommodations for advanced or hopeless cases. We must isolate the dangerous, hopeless consumptive; the community has a right to demand it and should take steps to enforce it.

3. These bills have been passed by the legislature, the inspectors have been appointed and trustees to erect the hospitals.

[THE SYMPOSIUM ON TUBERCULOSIS WILL BE COMPLETED NEXT WEEK BY THE PAPERS OF DRS. BROWNING AND PAQUIN AND THE DISCUSSION.]

GLYCOSURIA IN ITS SURGICAL RELATIONS.*

ALBERT E. HALSTEAD, M.D.
CHICAGO.

In presenting this subject no attempt will be made to follow any classification of the different forms of glycosuria nor to distinguish by any close differentiation between glycosuria and its more advanced stage, generally termed diabetes. This is done because at the present time the question of the etiology of diabetes is unsettled, and it is only by observing any individual case of glycosuria for some time that it is possible to determine to what class it will ultimately belong. Another reason for not separating these cases by sharp differentiation into the groups commonly given by the internist is that to the surgeon the mere presence of sugar in the urine is of considerable importance from a standpoint of prognosis.

My object will be to show what causal relation exists between traumatism and certain surgical diseases, and the presence of sugar in the urine, and to point out what influence this type of glycosuria has on the progress of the injury or disease that has called it into existence. I will also consider the effect of operative procedures on the course of diabetes, particularly the effects of anesthesia on diabetics, and to what extent an existing glycosuria should modify the treatment of surgical cases. Lastly, I will deal briefly with surgical complications depending on a well-established diabetes.

TRAUMATIC GLYCOSURIA.

In 1859 LeCoq called attention to the frequency with which head injuries are followed by sugar in the urine. Since that time many cases have been reported by other observers, among whom may be mentioned Recklinghausen, Fischer, Seegen and Redard. The latter, in 1885, presented a paper before the French Surgical Congress, in which he reported twenty-eight cases of traumatism of various kinds and surgical affections that were considered to be the exciting cause of glycosuria. In his report he cites not alone head injuries, but fractures and various other traumatisms that were followed by what he termed an ephemeral glycosuria. This lasted from one to eight days, as a rule, and was not associated

* Read in the Section on Surgery and Anatomy of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

with the other symptoms that are commonly found in diabetics.

In three of Redard's cases glycosuria followed simple fractures. In one, a fracture of the radius, sugar was found immediately after the injury and persisted for five weeks. In a second, 0.2 per cent. of sugar was found after a fracture of the clavicle, but disappeared within one week. Redard's paper caused considerable discussion; many regarded his cases as examples of intermittent glycosuria, the accident merely determining a relapse of an antecedent condition.

Hadke, in order to determine the frequency of glycosuria after simple fractures, examined the urine in twenty-five cases. In no case was a spontaneous glycosuria found, although in 60 per cent. an alimentary glycosuria from one day to one week could be demonstrated.

In 1894 Kausch reported eleven cases of glycosuria following trauma. Of these, 9 were simple fractures and 2 contusions of the soft parts without fracture. In all, glycosuria immediately followed the injury. The amount of sugar excreted in each case was below 1 per cent., and in none were there any other evidences of diabetes. The duration of the glycosuria was less than eight days, except in one case. In this it reappeared after the administration of an anesthetic on the tenth day, but subsequently the urine was found free from sugar. Kausch also found by studying his cases that the tolerance of those suffering from ephemeral traumatic glycosuria for carbohydrates rapidly increased from day to day until generally within a week it reached its normal point.

I have examined during the last three years fifty cases of fractures of various kinds to determine the status of sugar metabolism after injury. Of these, 44 were simple fracture without any other injury than the contusion of the soft parts commonly found in these cases, six were fractures of the vertebra, one complicated by a compound fracture of the femur, and one by crushing injury of the foot demanding amputation.

Of the forty-four simple fractures other than fractures of the vertebra there were:

Pott's fracture	10	Fracture of shaft of humerus.	3
Fracture of radius	5	Fracture of both bones of leg.	4
Fracture of both bones of arm.	4	Multiple fracture of scapula.	1
Fracture of clavicle	12	Fracture of the pelvis	1
Fracture of shaft of femur	4		

In six of these forty-four simple fractures sugar was found in the urine. In all cases the urine was examined within twenty-four hours after the accident, in most of them within a few hours. Daily examinations of the urine were made up to the fourteenth day after the injury was received. Sugar was found on the first day in four, fracture of the pelvis, fracture of the clavicle, fracture of both bones of the leg and fracture of the shaft of the femur. On the second day in one, fracture of both bones of the leg; on the fifth day in a case of fracture of the scapula with severe contusions of the back and head. In none of these could any history pointing to a previously existing glycosuria be elicited. The quantity of sugar excreted varied from 0.2 to 1 per cent. In five the urine was free from sugar at the end of the second week. In one it was present on the sixteenth day after the injury. Later examination could not be made as the patient left the hospital. In all the presence of the glycosuria was the only evidence of a disturbed sugar metabolism. In none did its existence exert any influence on the healing of the fracture. Of the six cases of fracture of the vertebra, one, a fracture of the fifth cervical, died on the second day; a second, a fracture of the lower dorsal with a crushing injury of the foot, died on the third day. In both of these cases sugar was found immediately after the injury. In one of the four remaining cases (that complicated by a compound fracture of the femur) there developed a glycosuria which continued until the death of the patient on the twelfth day after the injury. No sugar was found in the urine of the remaining three patients, all of whom lived longer than two weeks.

The chief significance of these observations lies in the light thrown on the etiology of traumatic glycosuria. To me they point to shock, particularly concussion of the cerebrospinal axis, as the principal etiologic factor. The relatively large percentage of cases, although the number is small, in which sugar was found in injuries of the vertebral column and in the more severe injuries associated with fractures of other bones, confirms this view. Kausch believes that, in addition to the mechanical concussion of the body, the psychic effect of trauma plays an important rôle. He believes that mental shock may determine a glycosuria in the absence of any bodily injury.

Outside of the possible indication of injury to the central nervous system the presence of glycosuria should be considered as to its influence on the healing of fractures, and to the possible course of treatment pursued in dealing with injuries requiring operative procedures. From my experience and that of others who have reported cases of glycosuria resulting from trauma, I would say that ephemeral glycosuria does not influence in any way the union of fractures. Neither should it constitute a contraindication to any operative treatment that may be deemed imperative. Nevertheless, I should postpone any operation that is not imperative until the sugar has disappeared from the urine. It is possible, by the additional shock of an operation, or by the influence of a general anesthetic, to convert a mild transitory or ephemeral glycosuria into a more severe type. Again, when the glycosuria becomes well established the possibility of having a non-union is greatly increased. It is well known that fractures occurring in diabetics sometimes result in delayed or imperfect union. Bellingham Smith cites five cases of simple fractures, three of which united after from three to five months, and two remained unhealed.

TOXIC GLYCOSURIA.

It is well known that a glycosuria, usually ephemeral in character, frequently follows the administration of certain drugs. With the exception of that following chloroform or adrenalin, these are of little interest to the surgeon. We also recognize as toxic glycosuria that type which results from the absorption into the circulation of the poisonous products of bacterial invasion of living tissue or that results from the decomposition of dead tissue from infection with the saprophytes. Glycosuria mostly follows infection with the ordinary pus micro-organisms. Here we find it in carbuncle, phlegmon and gangrene, representing generally mixed infections, and in erysipelas, when we have an infection with the streptococcus alone. We also find it in ulceration, particularly in foul ulcerating surfaces, where the saprophytes are also present.

The importance of recognizing the possibility of a secondary glycosuria from infection presenting these clinical characteristics is evident when we recall that these same varieties of infection frequently are found in diabetics, their existence depending on the changes in the tissues due indirectly to the presence of sugar in

the blood. These transitory glycosurias which result from infection are to be distinguished from the glycosuria antedating these conditions, and which may be the cause of the infection, by its mild character, and generally ephemeral existence. We also note in these cases a relation between the amount of sugar found in the urine from day to day and the intensity of the infection. The percentage of sugar generally increases immediately after a fresh invasion of tissue, as shown by a rise of temperature. We also find that as soon as the infection begins to subside, or immediately after free drainage is instituted, the sugar disappears from the urine. In secondary glycosuria none of the other symptoms of diabetes are in evidence. In a few cases polyuria has been reported. Generally we find that any marked increase in the quantity of urine is of but short duration. Polyphagia, thirst, etc., are not common. The significance of a secondary toxic glycosuria, in surgical infectious diseases, rests on the question of its influence on the progress of these diseases. In Redard's report he found that in fourteen cases of toxic glycosuria albuminuria was also present. He regarded this as warranting a guarded prognosis in every case, and considered the presence of albumin of greater importance than the defect in sugar metabolism. As regards the effect on the progress of carbuncle and phlegmon, from the cases reported it would seem as if the presence of a transitory glycosuria did not greatly affect the prognosis in these cases. Bellingham Smith cites eleven cases, all of which recovered.

I believe that in all the cases in which there exists a transitory secondary glycosuria we should endeavor to free the urine from sugar as rapidly as possible by instituting proper surgical treatment and by due attention to the diet. All major surgical operations should, in my judgment, be postponed, if possible, until this is accomplished. The presence of sugar, however, should not constitute a contraindication but rather an imperative indication for carrying out minor surgical procedures, such as incision and drainage of abscesses and abscission of gangrenous tissue. These operations should be done under local anesthesia. In long-continued suppuration the possibility of a secondary glycosuria becoming permanent must ever be kept in mind.

In erysipelas the presence of sugar in the urine must always be regarded as of serious prognostic moment. The mere existence of a glycosuria is not of itself the cause of the high mortality, but it indicates a severe type of infection. The quantity of sugar generally bears a direct relation to the severity of the infection. With a large surface involved and a correspondingly high temperature the sugar may reach as high as 6 to 7 per cent. Permanent glycosuria has followed erysipelas.

In Redard's report a number of cases are mentioned in which glycosuria supervened on the development of rapidly-growing neoplasms. This occurred in those in which sloughing and ulceration were present, and probably was the result of the toxemia from infection rather than that due to the growth of the tumor.

OPERATIONS IN DIABETES.

In dealing with this phase of the subject I will consider, first, those operations that are imperative, such as operations for intestinal obstruction or traumatic cases demanding immediate relief. In such cases the added dangers incident to the complicating diabetes must be taken into consideration, yet be risked. The only conditions that the diabetic complications impose on the surgeon are that he should reduce the surgical interference in every case to a minimum and select, where a choice is admissible, that operation that may be completed in the shortest time and that which will insure the least risk of infection.

As example, in acute appendicitis, in a diabetic, everything considered, an early operation will entail the least risk to the patient, because it can be done more expeditiously in the early stage of the disease and with a minimum risk of infection. On the other hand, if, as a consequence of the diabetes, we treat the case expectantly, the risk of an unfavorable termination is greatly increased by the added danger of abscess or general infection of the peritoneum, which, in turn, are strong predisposing factors in exciting a fatal diabetic coma.

In determining the propriety of an operation that is not at the time imperative but that will ultimately be required we must take into consideration the age of the patient, the stage of the disease, the toxic ingredients of the urine and the quantity of sugar eliminated. A marked degree of cachexia, as well as a coincident chronic alcoholism, will also influence one in determining the time of an operation.

As regards the age, the younger the patient the greater the risk of a diabetic coma supervening on any operation, particularly if a general anesthetic is employed. As a general rule, patients suffering from diabetes and a concomitant surgical lesion are past middle age. In these, particularly if the glycosuria has existed for some time, arterial sclerosis and trophic nerve degeneration resulting from the excess of sugar in the blood determines a lowered resistance of the tissues, which may result in infection or delayed healing of operation wounds. While these conditions do not obtain in the young diabetics, yet the danger of an acid intoxication terminating in coma resulting from the shock of an operation is very great and should always be given the most careful consideration.

In deciding the question of operation, the amount of sugar in the urine and the effect of medical treatment as influencing the quantity excreted is taken by many as the best guide in determining the expediency of an operation.

Tuffier is emphatic in pronouncing against operative procedures if, after a fair trial, medical treatment has not caused the sugar to disappear or to be materially decreased. This opinion is not shared by all. Many take the extreme view of not considering the quantity of sugar at all in determining on the operative treatment of any surgical case. The consensus of opinions, as gathered from a review of the literature, may be stated as follows: If the surgical lesion is such that it will permit of delay sufficient to allow of a thorough course in dieting and medical treatment, this should always be carried out. If the sugar disappears or diminishes quickly and the other toxic substances common in the urine of diabetes diminish correspondingly, any operation not entailing an unusual degree of shock may be attempted with confidence in the belief of favorable outcome. It must be remembered, however, that the disappearance of sugar from the urine even for a considerable time will not always be a guarantee against coma following a surgical operation.

In a case cited by Smith and Durham coma supervened on an operation in a patient whose urine had been free from sugar for two years. In every case the presence of acetone and oxybutyric acid and ammonia, even in the absence of sugar, should be regarded as of far

greater prognostic significance than any amount of sugar. When these substances are found any operation would best be postponed until by proper medical treatment they may be eliminated or reduced to a harmless quantity. Phillips believes that any considerable increase over the normal in the excretion of ammonia forebodes coma after an operation.

My conclusion concerning this question is, therefore, that we can not always rely implicitly on the quantity of sugar excreted as constituting a guide in determining the safety of any operation in diabetes. Yet I believe that a high percentage of sugar should call for a thorough course of treatment before any operation of magnitude that may be postponed is attempted. The disappearance of the sugar from the urine, if there remain other substances, the result of the disturbance of sugar metabolism, such as acetone, diacetic acid, excess of ammonia, etc., should not be permitted to lull us into a sense of security. These latter substances indicate a far greater danger from coma than does the presence of any quantity of sugar alone. An absence of these last named toxic substances, with a decreasing quantity of sugar, under medical treatment permits us to operate on diabetics providing we eliminate the possibilities of infection without any serious risk that can be charged up to the existing glycosuria.

It should be mentioned in passing that some observers consider the condition of the reflexes, particularly the patellar reflex, as of great value in determining the advisability of operating on diabetics. Bouchard first directed attention to this point. He reported sixty cases, in 29 per cent. of which the patellar reflex was absent. Of these 31.5 per cent died, while in the remaining cases where the reflex was retained only 4.5 per cent. succumbed. Regnier also considers that the condition of the reflexes favors a bad prognosis and strongly advises against any surgical interference in these cases. It may be said of this that diminution of the activity of the reflexes or their loss generally bears a direct relation to the quantity of sugar excreted, and, therefore, indicates an advancing stage of the disease and thus unfavorably influences the prognosis. That the absence of the reflexes in any individual case without relation to other symptoms should constitute a contraindication to the operative treatment of any surgical lesion occurring in a diabetic does not seem to be proved by the cases reported.

COMPLICATIONS. DELAYED HEALING AND INFECTION.

The question that first arises after operations on diabetics is, what influence the disturbed sugar metabolism will have on the healing of the wound. As a result of the presence of an excess of sugar in the blood, as the disease progresses there is a constantly increasing arterial sclerosis, which, if continued, will ultimately terminate in an obliterating process, principally confined to the smaller arteries. Secondary to this arterial change we find nerve degeneration affecting the trophic nerves. This degeneration is due to the disease of the artery supplying the nerve. From these two elements, defective blood supply and disturbance of nutrition through degeneration of the trophic nerves, there results a lowered activity in the process of repair. A third cause of defective nutrition is thrombosis of the larger arteries or veins, which is a common sequence to the changes mentioned above.

These various changes in the blood vessels are most marked in the lower extremities and thus account for the frequency of gangrene in lower, and its rarity in upper extremities. In long-standing cases of diabetes, particularly in alcoholics, the condition of the arteries of the lower extremity should always be ascertained before any operation is attempted. If the circulation in the principal vessels is absent or markedly deficient, no operation below the point where active pulsation ceases should be considered. Another factor in determining a delay in healing of wounds in diabetics is the added risk of infection, which is directly due to the presence of sugar in the tissues and indirectly to the defective circulation. The experiments of Nicholas, Kalinski and Ferron have shown conclusively that the presence of sugar up to a certain quantity in the tissues greatly increases the pus-producing qualities, while it diminishes the virulence of most of the micro-organisms found in infected wounds.

This influence on the growth of pus-forming microorganisms should always be considered in determining the advisability of operation, from the nature of which an aseptic course can not be expected. Elective operation on the rectum, about the genital organs, and in the aural or nasal cavities should be avoided, when possible, in advanced diabetes. In suppurations occurring in these regions prompt surgical interference is demanded because of the rapid spread of infections.

Concerning the question of healing of operation wounds in diabetics it may, therefore, be stated that every wound, when aseptic conditions are maintained, will heal promptly in diabetics excepting in the lower extremities. In wounds not of these locations that become infected the dangers incident to infection, of which delay in healing is one, are all greatly enhanced by the presence of an excess of sugar in the blood. Operations that can be avoided should not be considered.

By many surgeons the danger of hemorrhage, either at the time or after the operation, is considered a contraindication to operative procedure on diabetics. From a review of the literature and from my own experience in operating in diabetes I should say that, excepting as far as the additional risk of suppuration increases the risk of a secondary hemorrhage, that this danger does not exist. In order to forestall the expected hemorrhage in many of the cases reported the cautery was employed as a hemostat at the time of the operation. This undoubtedly accounts for the frequency of secondary hemorrhages.

Effects of operations on the glycosuric condition are evidenced in many cases by an increase in the quantity of sugar eliminated, and in a few by the onset of coma resulting from an overwhelming increase in the blood of toxic products that result from the disturbed sugar metabolism. In many cases in which, for some time previous to the operation sugar had been absent from the urine, and no other evidences of diabetes were present, after an operation or an injury sugar reappeared in far greater quantities than before.

Redard reports one case in which trauma aggravated an existing glycosuria. The sugar increased from 10 to 25.2 gr. per one thousand liters, and then diminished again after fifteen days to 12 gr. Coincident with the increase in the sugar there may develop an acetonuria in subjects of glycosuria in whom previous to the operation or trauma the urine had been free from acetone, β-oxybutyric acid, etc. This is more likely to occur in young individuals and in extremely septic cases. In the latter cases the coma is probably frequently more the result of septic intoxication than of the acid intoxication.

In order that we may avoid the dangers of coma following surgical operations too much stress can not be placed on the necessity of thoroughly preparing patients by instituting a rigid course of medical treatment as a preliminary measure in all surgical operations. In addition to the enforcement of a strict diet, the administration of large and frequently repeated doses of soda bicarbonate should be employed to neutralize the acid products of incomplete metabolism that are the cause of coma.

As previously stated, it is only after disappearance of these acid bodies and ammonia from the urine that we are justified in attempting any but the most urgent operations.

In addition to the administration of soda by mouth in extreme cases, it may be given subcutaneously or intravenously. Kausch and Schwartz also recommend the use of glykon acid in doses of 30 grs., in one-half liter of water, neutralized by soda bicarbonate. If coma develops, the free use of soda (150 grs. in twenty-four hours) offers about the only hope of saving the patient. The probability, however, of recovery after coma has once developed is remote. Our treatment should be more directly prophylactic.

ANESTHETICS IN DIABETES.

The use of inhalation narcosis is generally to be avoided, if possible, in diabetes. Therefore, for diagnostic purposes, and in minor operations, they must not be employed under any circumstances when there is a well-established glycosuria. In cases in which no other means of producing analgesia will fulfill the indications of the case we must select the one least harmful. Experimentally and in clinical cases it has been proved without any question that ether should be the anesthetic of choice. It has been demonstrated by the observations of Abrams and others that in non-diabetics postoperative acetonuria of some degree develops in about 66 per cent. of the cases when chloroform is employed. This is the result of an intense parenchymatous degeneration, involving especially the liver. This being true in the non-diabetic, healthy person, it must follow that it is most dangerous in diabetic subjects, and its use under all circumstances should be condemned.

Frequent narcoses following each other at short intervals should never be permitted, even where a minimum quantity of sugar is found in the urine. The quantity of anesthetic of any kind, as well as the duration of the narcosis, influences the prognosis in surgical operations in diabetics and should be reduced to a minimum.

Narcosis from nitrous oxid gas has recently been extolled as harmless in these cases. This anesthetic is not free from danger, as experience has shown that a persistent glycosuria may develop in a previously healthy individual after the prolonged use of nitrous oxid.

Whenever it is possible, some of the generally accepted methods of producing local or regional anesthesia should be chosen. As the greatest danger in the use of general anesthetics is from postoperative coma, a preliminary treatment with bicarbonate of soda, as heretofore indicated, should be instituted in every case where it is possible. Kausch lays stress on the advantage obtained in operating on diabetics after a minimum period of starvation. The nutrition after the operation should also receive attention, as should the use of bicarbonate of soda, administered in sufficient quantities to maintain an alkaline urine.

GANGRENE IN DIABETES.

As a result of a lowering of the resistance of the tissues against infection by the presence of an excess of sugar in the fluids of the body and from diminished blood supply depending on changes in the blood vessels, gangrenous processes frequently result from diabetes. That arterial sclerosis and obliterating endarteritis are important etiologic factors in the development of gangrene of the extremities has been shown by Senator, Israel, Koenig, Winniwarter and Heidenhain. The chief vascular change found in limbs amputated for diabetic gangrene is arteriosclerosis. This is found not only in the terminal divisions, but in the main trunks of the arteries. Endarteritis obliterans of the small terminal branches has also been found frequently by Heidenhain and Gussenbauer in both gangrene and perforating ulcer in diabetes.

Thrombosis, generally secondary to arterial sclerosis, at the points of division of the main arterial trunks has been noted in many cases by Küster and others. Thrombosis of the veins, although common, plays a secondary rôle in determining the onset of a gangrenous process. Besides, the effect on the nutrition of tissues, from the arterial changes, direct, we have also in long-standing diabetes a trophic nerve disturbance resulting from a similar change in the vessels supplying the nerve trunks. The influence of this trophic nerve lesion in the form of a parenchymatous neuritis was first pointed out by Ebstein.

Gangrene occurring in the upper extremities, and the surface ulceration and gangrene of the trunk can not be attributed to the vascular changes mentioned above. In these the lowered resistance of the tissues and the accidental traumas and consequent infection play the most important etiologic rôle.

Age also has a bearing on the development of gangrene in diabetes. In the great majority of cases this complication occurs in persons past 50. The advanced age favors arterial sclerosis, which in turn is the principal cause of defective blood supply of the extremities. Etiologically there is a close resemblance between the gangrene of diabetes and that due to senile changes in the blood vessels. Although the anatomic changes are practically identical in each, clinically the course varies greatly. In that occurring in diabetes the facility with which the tissues become infected and the rapid and fatal course of such infections call for a more guarded prognosis and more prompt and energetic surgical interference.

In the treatment of gangrene of diabetes it goes without saying that the prophylaxis is of vast importance. In all cases when diabetes is recognized, particularly in persons beyond middle age, warning against the possible serious outcome of slight abrasions and infections should be impressed on the patient. Corns, warts and calluses of the lower extremities should receive the most careful attention and be treated only under the most rigid antiseptic conditions. In one-half of a series of sixty cases of gangrene reviewed by Bellingham Smith gangrene started from some insignificant lesion, such as a corn or an abrasion of the skin of the foot.

Impending ischemia, evidenced by loss of muscular power, pain, cramps, coldness of the surface, and loss of pulsation in the terminal arteries of the extremities, calls for rest, with administration of remedies that will improve the circulation to the part. Abrasions and cutaneous lesions of the extremities should be protected

from the danger of an accidental infection by a dry antiseptic dressing.

When gangrene of the lower extremities has developed the question when and where to amputate is one of great importance. Generally speaking, local interference in the way of cutting operations on the sloughing tissues is to be avoided. The necrosed part should be kept dry and free from infection if possible. In cases where the gangrene is of the moist variety the infection may be limited by hardening the sloughing tissue by the use of alcohol or formalin dressings applied so as not to further impair the vitality of the adjacent parts.

When the gangrene is limited to one or two of the toes and the circulation in the posterior tibial and dorsal pedis is unimpaired, amputation of the gangrenous toes alone is indicated. If pulsation in the dorsal pedis is absent and that in posterior tibial remains full, amputation below the knee may be considered. When the gangrene has reached the dorsum of the foot, amputation above the knee should always be advised. In these cases obstruction of the popliteal at its bifurcation will in a large percentage of the cases be found, and will constitute an imperative indication for a thigh amputation.

Küster's experience points to the importance of high amputation in diabetic gangrene. Of thirteen cases of amputation below the knee, two of the wounds healed after sloughing of the flap, two patients died after gangrene of the stump had developed, and in nine a second amputation had to be performed. Of seventeen patients in which an amputation above the knee was the primary operation eight died, but without extension of the gangrene, three wounds healed by primary union, three with slight marginal necrosis of flap and three after reamputation for gangrene of the flaps. In my experience necrosis of the flaps, even in thigh amputations, has invariably followed when thrombosis of the veins of the flap was found at the operation. In these cases a higher amputation through tissue in which the vessels are not thrombosed must be made.

In amputations of the lower extremities in diabetics a general anesthetic is unnecessary in most cases and should not be administered. Analgesia by means of spinal cocainization is the method that in my experience insures the least risk to the patient. In the exceptional cases in which unconsciousness is to be desired ether should be the anesthetic of choice. Conservation of the vitality of the tissues is to be attained by rapid operating, with the minimum amount of handling of the tissues and the avoidance, if possible, of circular elastic constriction of the limb. Following amputation, as after every operation, the glycosuric condition should be treated by generally accepted methods, including the most rigid regulation of the diet.

DISCUSSION.

DR. HENRY S. STARK, New York, pointed out that all writers on the surgical aspect of diabetes are a unit in advocating that the main features are to avoid shock and hemorrhage and to prevent coma, but they do not say how to prevent the coma. Surgeons are told to be as expeditious as possible and to avail themselves of every advantage which is to be derived from surgical asepsis; make an incision as small as possible, and operate early in the day, when the patient's constitutional condition is at its best; and to avoid pressure as much as possible, because in diabetics nerve degeneration is apt to ensue. But, he asked, are not all these factors just as applicable in the case of patients who are not diabetics? In all cases it is just as necessary to avoid shock, hemorrhage and coma; so that there are at present no definite data on which the surgeon can act. For example, when the system is below par as the result of a chronic nephritis, or from a chronic inflammation or disease of the liver, surgeons ought to bear in mind all of these points, just as they do when operating on a diabetic. Some authors state that if the excretion of urea per day reaches a certain amount, 3 grams, or that if the blood shows a condition of hyperglycemia, then there is an added danger in operating on a diabetic. But, unfortunately, not many surgeons are able to make the physiologic tests to determine the presence of a hyperglycemia. It is also stated that in case there is a large output of acetone bodies, in other words, when the patient is in a condition of acid toxemia, there is additional danger in operating on such patients. But, again, no definite data are given by which one can determine these things and also overcome the excessive excretion of acetone bodies. Besides, an acidosis is a not infrequent accompaniment of other diseases than diabetes. Dr. Stark said that it is deplorable that physiologic chemists have failed to discover any methods available for the general practitioner to determine the acidity of the urine, and he ventured to say that very few surgeons ever make any tests to determine the quantitative alkalinity of the urine so that many of these points are still in the theoretical stage. One point Dr. Stark mentioned that was not emphasized by the author was the question of gangrene. Is there, he asked, such a distinct pathologic entity as "diabetic gangrene?" He thought not. Pathologists say that the gangrene so common in diabetics merely follows an arterial sclerosis which in itself produces an obliterating endarteritis, and latterly a gangrene which is prone to microbic infection, as are all lesions in diabetes. In a paper read before one of the sections, the author claims that there is no distinction pathologically between diabetic gangrene and the gangrene of Raynaud's disease and erythromelalgia. Regarding the glycosuria, many patients excrete much sugar and yet their general condition is good. Many patients excrete small quantities of sugar and their general condition is very bad. Therefore, it is impossible to determine the patient's condition by the mere estimation of the amount of sugar excreted. Many say that operation ought to be deferred until the system can be freed from sugar. That is not true in every case. Dr. Stark thought that surgeons ought to divide operations on diabetics into two classes: Those done for lesions directly due to the diabetes, such as gangrene, and carbunculosis; and those done for lesions not due to the diabetes.

DR. A. J. OCHSNER, Chicago, believed it is wrong to allow the statement to pass as the opinion of the Section that there is no difference between gangrene due to diabetes and that due to endarteritis or any other cause. Although pathologically there is no difference, there is a very decided and definite difference clinically. The difference is this: If in diabetic gangrene one disposes of the diabetes, the tendency of the gangrene to spread subsides at once. On the other hand, if one does not dispose of the diabetes, there is a progression of the gangrene. In something over 30,000 operative surgical cases that have come under his observation clinically Dr. Ochsner has encountered relatively a large number of cases of diabetes, so that he was speaking from practical observation. In making these observations he had an abundance of opportunity to demonstrate this clinical fact that in gangrene which is due to old age although there is some possibility of changing this tendency by hygienic and dietetic measures, there is not the possibility that there is in gangrene which is due to diabetes. He has now under observation a case that fourteen years ago had diabetic gangrene. By dietetic treatment the diabetes subsided, the gangrene healed and the patient is well, having lost but two toes.

Dr. Ochsner especially emphasized the point that we place these cases in the care of physicians who know how to treat diabetes because surgeons are accustomed to getting through with the patient, while the man who properly treats a diabetic patient treats him personally. By placing the patient in the hands of one who prescribes a diet on which the patient can live with comfort indefinitely, the patient will be satisfied and will remain free from his diabetes, and there will not be a recurrence of the gangrene.

THE TREATMENT OF TRAUMATIC RUPTURE OF THE KIDNEY,

WITH REPORT OF TWO CASES OBSERVED WITHIN EIGHTEEN HOURS.

EDMUND A. BABLER, M.D.
Associate Surgeon, St. Louis Skin and Cancer Hospital.
ST. LOUIS.

GENERAL CONSIDERATIONS.

When Simon, in 1869, removed by lumbar incision the kidney of a woman who had a ureteral fistula opening on the abdominal wall above the pubes, he succeeded not only in proving clearly the erroneousness of Lawrence's contention, that "the kidney, fortunately, was beyond the reach of the surgeon," but also in demonstrating the vital fact that a single kidney is, in many instances at least, capable of performing the duties of itself and mate. Simon's researches created a surgery of the kidney.

Previous to 1878 traumatic rupture of the kidney was regarded of very rare occurrence; Maas could find only 71 cases recorded in the literature. To-day, owing to the advent of the many methods of rapid transit, combined with the increased number of dangerous occupations followed by mankind, the kidney is more frequently ruptured than in former years. Ninety-four per cent. of the patients are males. During childhood we find that the proportion of males drops to 80 per cent., with a corresponding rise in the number of females to 20 per cent. Females are the less exposed, owing to their mode of life and dress and by anatomic differences.

The kidney may be ruptured by either a direct or an indirect blow. Campbell cites a very interesting and instructive case in which the lesion was due to a girl, 14 years of age, doubling up her body forcibly to the left in jumping a hedge. She immediately experienced severe pain with collapse and the passage of bloody urine.

The pathologic findings are variable, ranging from a more or less extensive bruise of the kidney without any distinct tear of the capsule or solution of the kidney reaching the surface to a pulpification of the organ. In Rutherford's remarkable case, operation showed the kidney fractured across and separated from the ureter and blood vessels. Herzog has found that in falls and blows on the lumbar region the hilus of the kidney is usually torn and that retroperitoneal hemorrhage occurs.

In crushing trauma from in front, the kidney is torn anteriorly and crushed; hemorrhage takes place usually into the general peritoneal cavity. Intraperitoneal rupture of the kidney occurs more frequently in childhood than in adults because of the late development of perinephritic fat. Usually the rupture is transverse to the longitudinal axis of the kidney. This is due to anatomic causes. In Phelps' very instructive case the rupture occurred in the longitudinal diameter. Masius believes that the anuria following kidney injury can be explained by the fact that the vagus and splanchnic supply the renal vessels; irritation of the former causes contraction and hence suspension of excretion of urine. Interstitial nephritis in the opposite kidney may follow kidney rupture.

The three principal dangers attendant on renal injury are hemorrhage, anuria and sepsis. In former years sepsis was responsible for a very large percentage of the fatal cases. Complete obstruction of the ureter causes an atrophy of the kidney, while partial obstruction favors the development of renal abscess, a pyo- or a hydro-nephrosis, or a cystic kidney. In many of the cases of renal injury there is only partial obstruction of the ureter; hence the frequency of abscess. In one of Fenger's cases, observed one year after the accident, there was a renal and a hepatic abscess, as well as a collection of pus both below and above the diaphragm.

SYMPTOMS.

Hematuria is one of the most frequent symptoms. Charteris and others have cited cases of complete rupture of the kidney in which hematuria was absent. This was due to obstruction of ureter by means of bloodclot. Newman attended a patient in whom the hematuria following a blow on the abdomen was due to papilloma of the bladder. Neither the persistency of the hematuria nor its severity are reliable criteria of the severity of the lesion. A clot of blood plugging the ureter may be associated with an alarming extra-peritoneal hemorrhage. McPheeters cites a case in point.

Pain of a severe and radiating character is almost always present. In some cases it is referred to the testicle; the latter may be swollen and very tender to palpation. The pain may at first be so slight that the patient refuses medical attention; later it may be excruciating in character. The mere passage of a clot of blood from the kidney into the bladder oftentimes induces great pain.

Prolonged shock is indicative of either peritoneal soiling or, especially if of increasing severity, severe peritoneal hemorrhage. The patient may partially recover from the primary shock, then be seized with excruciating abdominal pain and increasing pallor. This secondary shock is almost invariably indicative of severe peritoneal soiling.

A tumor is not always present; at times it will be overlooked. Its detection is of great import. The temperature may be subnormal. Usually it ranges between 100 F. and 103 F. The pulse is, at times, very misleading. It may be very slow. Dodge pins considerable faith to rigidity of the muscles of the back and flank. He regards them as characteristic of renal rupture.

DIAGNOSIS.

The difficulty of diagnosis lies in those cases in which hematuria is absent or delayed and in those complicated with injuries to other viscera. Even in the apparently difficult cases a careful study of the history of the accident and of the clinical picture as a whole will enable the medical attendant to recognize those cases in which surgical treatment is urgently called for. The character of the injury, the site of impact, the severity and persistency of the collapse, the expression, the character and severity of the pain, the rigidity, the palpable mass, the hemorrhage and the picture in general will almost invariably guide correctly. In every abdominal injury or fall from a height the patient's urine should be examined. This is especially true where the patient sustains a fracture of the lower ribs.

PROGNOSIS.

The prognosis depends materially on the character and severity of the injury and the time and character of the treatment. Many patients recover without the true nature of the lesion having been suspected. In the graver cases the patient succumbs to hemorrhage or sepsis unless operated on. When the injured kidney is the only one possessed by the patient the prognosis is prac-

tically hopeless. It seems probable, however, that even in these latter instances it may be possible to bring about recovery, provided the fracture does not involve the renal pelvis. In 22 of Keen's cases, nephrectomy was performed, with a mortality of 36 per cent. Primary nephrectomy yields a larger percentage of renal rupture cures than can be obtained by secondary nephrectomy. Early recognition of the severe cases and early incision will reduce the mortality to below 10 per cent. in uncomplicated cases. Possibly the fatal anuria may be circumvented by enemata of warm saline solution and free diaphoresis.

TREATMENT.

The secret of success in the treatment of traumatic rupture of the kidney lies in the elimination of the "mortality of delay." The first essential question presenting in every case of renal injury refers to the severity of the lesion: Is there profuse hemorrhage or a perirenal collection of urine and blood or a soiling of the peritoneal cavity? When we can, after a careful consideration of the history of the accident, and study of the clinical picture presented, etc., feel confident that prompt exploratory incision is not necessary, the treatment is palliative. The shock is treated according to its severity.

With exploratory incision comes the question of nephrectomy. Before determining whether simple lumbar incision, packing and drainage, or prompt excision of the lacerated kidney is preferable, we must ascertain the condition of the injured organ, the possibility of partial nephrectomy, and the presence or absence of a second kidney. When lumbar incision shows that the large vessels are intact and that the rupture does not involve the renal pelvis, suture and drainage, or packing and drainage, are indicated. The fact that simple packing may produce intestinal obstruction by pressure must not be forgotten. It is worthy of mention that Keetley in 1890 succeeded in excising the pulpified portion of a human kidney. In 1891 Bardenheuer removed one-third of a kidney. These researches necessitate that every inch of the kidney be saved. When a median incision has enabled the surgeon to find a healthy functionating kidney, and when the hemorrhage from the injured organ has been severe, it is safer by far to perform primary nephrectomy than to resort to packing and drainage—measures that may prove inefficient to prevent a secondary hemorrhage, or, eventually, death from sepsis.

In so far as I can determine by a review of the available literature, the credit of performing the first nephrectomy for renal injury belongs to Brandt. The operation was performed in 1873 and the patient recovered. Dodge advocates the McBurney incision. He begins the skin incision at the outer border of the erector spinæ muscle and extends it along the free border of the rib to the anterior axillary line. I have found the technic quite satisfactory. The pseudo-hydronephrosis following renal injury is, in my opinion, best treated by lumbar incision. Aspiration may bring satisfactory results, but the uncertainty of the procedure condemns it.

REPORT OF CASES.

CASE 1.—About 8:10 p. m., Aug. 24, 1906, patient was seen in consultation with Dr. A. S. Bleyer, to whom I am indebted for the following data:

"*History.*—August P., fresco-painter; age 24; German; convalescent from an attack of typhoid fever. At 6:40 p. m., while riding north on a motor-cycle, he ran into an automobile which was going south and had suddenly turned east. The mud-guard struck him a severe blow in the left lumbar region; he clung to the mud-guard of the automobile and was carried, on his cycle, a distance of about fifty feet. He was lifted off the automobile and cycle and carried to the curbing, from whence he walked to office—a distance of 150 yards.

"*Examination.*—On my arrival, half an hour later, the patient was lying, undressed, on a couch. He was deep in shock; color, ashen; lips, pale; expression distressingly anxious; pulse 108 and weak; respirations 32, and purely thoracic; pupils equal and reacted to light; temperature 97.5 F.; left rectus very rigid; absence of intestinal peristalsis; catheterization showed large amount of blood in the urine. Patient complained of severe pain of paroxysmal character in the left abdomen; there was also severe pain in the region of the right kidney, radiating to the testicle. Neither flatus nor feces had been passed since the accident. After the administration of warm saline enema, and atropin sulphate, and the application of hot bottles, the shock seemed somewhat lessened.

"*Diagnosis.*—Rupture of the left kidney, and of intestines. A messenger was sent to notify the patient's friends. Dr. Babler was telephoned for, and an ambulance called."

Subsequent History.—After going over the case with Dr. Bleyer, I was confident that his diagnosis was unquestionable. Dr. Bleyer accompanied the patient to the hospital. One hour later I again went over the case with him, and we again urged immediate operation, but the patient remained firm in his decision to die rather than to be operated on. At this time his condition was decidedly worse; pulse 122; respirations 38; shock deeper; abdominal pain increased; frequent passage of bloody urine; nauseated; very restless.

We saw the patient at intervals of one or two hours until after 1 a. m. We tried repeatedly to reach his physician, but without success. It was very discouraging to be compelled to go away that morning knowing only too well the fate that would surely follow the unfortunate fellow's refusal. At 5:30 a. m. the condition of the patient was decidedly worse. The features were pale and distressed; the pulse was 148; respirations were now 44, and thoracic in character; the abdomen was markedly distended, and the recti were rigid; the bowels had not moved and flatus had not been passed; nausea and vomiting were prominent; the urine showed no signs of clearing. The abdominal pains were very severe and of a paroxysmal character. The poor fellow remained firm in his decision. Several hours were spent in trying to reach the family physician, and we were eventually successful. The consultation was held at noon. The opinion that immediate operation was absolutely necessary, was unanimous. The patient continued to refuse operation, and was persuaded by his wrongly-directed friends to be removed to a far-distant hospital, where operation confirmed our diagnosis. The patient died, so I am told, the same night.

CASE 2.—My second patient was seen about 1:30 p. m. Aug. 25, 1906, through the courtesy of Dr. Louis W. Ehrlich of 1831 S. Ninth St., to whom I am indebted for the following data:

"*History.*—About 9 p. m., Aug. 24, 1906, Bernard H., a schoolboy 10 years of age, fell from a porch to the brick pavement, a distance of 12 feet. In the descent the lad's right thigh struck the sharp portion of the top of a whisky barrel, thereby forcing his body forward and to the right; the top of the barrel then came in contact with the lower ribs, forcing the latter upward and backward.

"*Examination.*—On my arrival, the patient was found in moderate shock; pulse 98; temperature 97.5 F.; respirations 22 and of an abdominal type; pupils equal and reacted to light; palpation revealed absence of abdominal rigidity, but presence of marked tenderness in region of right kidney. No evidences of lumbar tumor of palpable size; catheterization showed urine free from blood. A deep and long laceration was found on outer and upper surface of right thigh. Flatus was passed since accident. The lad complained of more or less severe pain in the region of the right kidney, and along the course of the right ureter. The wound was then dressed, and instructions given to notify me promptly in case of appearance of unfavorable symptoms. Owing to the nature of the

accident the probability of renal injury was seriously considered. On the following morning the lad's condition was not improved. In fact, the temperature was 99.5 F., pulse 100, urine contained considerable blood, and there was marked tenderness and palpable swelling in right lumbar region. Within an hour thereafter the pulse reached 110 and temperature 100.2 F. There were radiating pains along the course of right ureter, and the right testicle was retracted and tender. Renal rupture was diagnosed, and Dr. Babler was called in consultation."

When Dr. Ehrlich and I reached the patient's bedside the pulse was 130, temperature 100.5 F., but the brave little lad did not complain of severe pain in the abdomen. On careful examination I confirmed Dr. Ehrlich's diagnosis, and advised prompt operation. The pelvic mass, which was found on rectal palpation, diminished in size when the patient was catheterized, and since the clinical findings did not indicate a bladder lesion, we concluded that the mass was the bladder, partially filled with blood clots.

Operation.—The patient was sent to the Lutheran Hospital and prepared for immediate operation. Under ether anesthesia, a median incision revealed the presence of the left kidney in apparently normal condition; a large, tense, fluctuating mass in the region of the right kidney; and along the entire course of the right ureter was a column of blood and urine apparently two inches in diameter. The peritoneum was now closed, and gauze pads placed over the parts, while the bladder was exposed extraperitoneally, and a small incision made through its anterior wall. At least a quart of clotted blood was evacuated; the bladder was then irrigated thoroughly, and closed by means of catgut sutures. A very small drain was placed in the lower end of abdominal incision and the wound closed in layers, and then dressed. Turning the patient on the left side, a McBurney incision was then made. About three pints of urine and blood escaped; the kidney was found ruptured transversely in three places. The fracture in the middle third of the kidney extended into the renal pelvis. It seemed useless, owing to the condition of the organ, the condition of the patient, and the dangers attendant on probable infection, to attempt to repair and replace the kidney. Nephrectomy was performed. All drains were removed by the third day. Both wounds were healed at the end of a week. The lad left the hospital on the twelfth day. Dr. Ehrlich told me at the time of writing that the lad is in excellent condition.

CONCLUSIONS.

1. Careful consideration of the nature of the accident, combined with due appreciation of the clinical findings, render an early diagnosis fairly easy.

2. Hemorrhage and sepsis are responsible for a very large percentage of the mortality. The elimination of this "mortality of uncertainty and delay" by means of early diagnosis and proper treatment will reduce very materially the number of deaths following traumatic rupture of the kidney.

3. The severity of the lesion, the presence or absence of a second functionating kidney and the condition of the patient regulate the character of the treatment.

4. Warm saline enemata administered every hour or so yield surprisingly good results.

5. The secret of success in the treatment of renal rupture lies in determining not only the necessity of operation, but also the preferable technic.

6. When blood has clotted in the bladder, the clots should be evacuated through an extraperitoneal incision, the bladder flushed with warm salt solution and then sutured.

4826 Delmar Boulevard.

Aqueous Lotions in Acute Skin Diseases.—Never use aqueous lotions in acute vesicular or erythematous eczema, for water will always irritate the lesions and intensify the pathologic process. Protection is the indication, and pastes or powders are useful in such cases.—Aronstam, in *Medical Fortnightly.*

INVOLVEMENT OF THE CORNEA AND BULBAR CONJUNCTIVA IN THE SECONDARY STAGE OF SYPHILIS.

BROWN PUSEY, M.D.
CHICAGO.

Involvement of the cornea in the secondary stage of syphilis is not referred to in the literature as a possibility. Its neighboring structure, the conjunctiva bulbi, in a few instances, has been found involved in the secondary manifestations of this disease, but such involvement is of the greatest rarity, a careful search of the literature revealing records of only a few such cases. Recently, in my service at the Cook County Hospital, I had a case showing secondary syphilitic pustular eruptions involving the cornea and the conjunctiva of the globe and lids.

Patient.—T. O., aged 22, male, a porter by occupation, was admitted to the dermatologic division of Cook County Hospital April 19, 1905, where the diagnosis of syphilis in the secondary stage, which was made at the receiving room, was confirmed by the attending dermatologist, Dr. William Allen Pusey. On the following day, because of the eye conditions, the man was transferred to my service. Little of interest is obtained from his former history. He has been frequently exposed to venereal infection and has had gonorrhea several times. The present trouble was first noticed about six weeks ago when he "broke out" over the body, limbs and face.

Examination.—When admitted the general condition of the man was much below par and he said that he had lost a good deal in weight. Temperature was 100. There was a generalized macular eruption with some papules and pustules. The eruption was abundant, symmetrical and universal. The mucosa of the mouth was involved. There was a general adenopathy, the posterior cervical glands being much enlarged. About two weeks previously the knees became tender and swollen and when admitted there was considerable fluid in both joints. He walked with a limp. The patient said that so far as he knows he has not had any recent sore on his penis or any suspicious sore anywhere else; there is no question of his being exposed frequently. No scar of a primary syphilitic sore can be discovered on the penis. The eyes had become involved about four weeks before admission. The conjunctivæ of the lids and globe of both eyes were the seats of pustular eruptions. In the left eye several of these pustules were located on the ocular conjunctiva, and three on the margin of the lid; in the right eye there was one large pustule a little removed from limbus at the outer side, three on the margin of the lid, and a pustule a little above the center of the cornea. The pustules varied in size; those at the margin of the lid of the left eye had a diameter of 3 mm. or 4 mm.; the one on the cornea had a diameter of about 1.5 mm. They were covered by a yellowish exudate and had a somewhat punched-out floor. The conjunctivæ of both eyes were diffusely hyperemic, and the vessels of the limbus region of the right eye were engorged. There was lachrymation and the patient complained of photophobia. He said that at first the left eye was the worse, and that it had become better; at the margin of the cornea to the outer side there is a scar which possibly represents a part of the present process—a healed ulcer.

Treatment.—The man had had no treatment. He was put on protoiodid of mercury, ½ grain, and 20 grains of potassium iodid, three times a day; after five days the mercury was increased to ¾ grain. Locally the eyes were irrigated three times daily with boric acid solution, which was followed by the application of a drop or two of 10 per cent. solution of protargol. At first atropin was used. Within three or four days the man was markedly better; the eyes began to clear up, the fluid in the knee joints disappeared, he had a good appetite and felt decidedly better. By the fifth day only a grayish scar was left to mark the seat of the corneal ulcer, and in two weeks his eyes were entirely quiet.

The literature on the subject of secondary syphilides of the bulbar conjunctiva may be said to begin with the report in 1845 of Smee.[1] In 1861 John F. France[2] reported three cases and says:

> This form of disease presents itself as a limited and well-defined discoloration of the mucous membrane of the globe, which within the affected area is slightly thickened and raised, but not conspicuously, if at all, more than the neighboring surface. There does not seem to be any disposition to ulceration as when the margin of the lid is attacked with syphilis; there is no pain and no morbid discharge.

France gives Smee the credit of priority in the observation of these cases. Desmarres,[3] in 1855, recorded a case of secondary syphilid of the conjunctiva bulbi. In 1876 Savy[4] recorded two cases of syphilitic papular eruption of the conjunctiva bulbi, and in 1880 Sichel[5] recorded a case. The diagnosis in Sichel's case was confirmed by Fournier and Ricord and in Sichel's article is found the interesting statement from Fournier that Sichel's case was the second of the kind that he had seen in his extensive experience. From 1881 to the present time Dor,[6] Fialkowsky,[7] Lang,[8] Trapesnikow,[9] Fromaget,[10] Herter,[11] Terson,[12] Gutmann,[13] Rothschild,[14] Staelin,[15] v. Michel,[16] Wolff,[17] Lavagna,[18] Schreiber (2),[19] Schrapringer,[20] and Enslin[21] have reported such cases. This sums up, including my case, twenty-seven cases.

I have been prompted to collect these cases and they are noted here because of the diverse statements that I met in the first study of my case. In the most recent work of reference, the Graefe-Sæmisch "Handbuch der Gesammte Augenheilkunde," 1904, p. 751, one finds in the consideration of syphilitic diseases of the conjunctiva the statement from Groenouw: "Syphilitic papules of the conjunctiva were formerly held to be rare; probably, however, they were frequently overlooked, since they usually cause no subjective disturbances." And on page 752, in speaking in general of the condition, he says: "Located frequently on the conjunctiva of the bulb." In contrast to Groenouw's consideration of the subject, where one, as regards the frequency of the condition, can only get the impression that involvement of the bulbar conjunctiva is not rare in secondary syphilis, are the reports of Schreiber and v. Michel. Schreiber wrote from the clinic of Lang in the *Allgemeinen Krankenhaus* in Vienna—surely an authoritative source—and emphasized the rarity of the condition. Prof. v. Michel recorded his case as one of great rarity. The result of my effort in collecting recorded cases, as was noted, is twenty-seven cases, which confirms the views of Schreiber and v. Michel, and warrants certainly the statement that involvement of the bulbar conjunctiva in secondary syphilis is rare.

Involvement of the cornea in the secondary stage of syphilis must be extremely rare, for, as was said at the beginning of the report of this case, such involvement is not mentioned in the literature as a possibility. In the case here recorded, involvement of the cornea existed along with involvement of the conjunctiva, and such a combination would seem most likely. In going over the records of the conjunctival cases this idea has been borne in mind.

In a foregoing paragraph I quoted from the description given by France of his case. This was done primarily because the written description—barring the copper color, which, by the way, is of uncertain quantity—and the pictures remind one somewhat of vernal conjunctivitis. No emphasis is necessary to point out the possibility of confusing this condition with phlyctenulæ. Another condition which may have to be considered in differential diagnosis is an eruption of herpes zoster in the region of the trigeminus, as was true in v. Michel's case in which at the first view of the patient a zoster eruption was thought of.

Secondary syphilid of cornea and bulbar conjunctiva.

1. Case of Copper-Colored Syphilitic Eruption Affecting the Conjunctiva. London Medical Gazette, 1844-45, i.
2. Syphilitic Blotch of the Conjunctiva. Guy's Hospital Reports. Third Series, 1861, vii, 109.
3. Affections Syphilitiques de la conjonctive. Traite des Mal des Yeux. Paris, 1855, p. 213.
4. Contribution a l'etude des eruptions de la conjonctive. These de Paris, 1876.
5. Ein Fall von Conjunctivalsyphilid. Centralle f. p. Augenhk., 1880, p. 145.
6. Papules syphilitiques de la conjonctive palpebrale et bulbaire. Rapport de la clin. Lyon, 1881.
7. Ein Fall von papuloser Syphilis der conjunctive bulbi. Wratsch, 1881, p. 73.
8. Vorlesungen über Pathologie und Therapie der Syphilis. Wiesbaden, 1884-86, p. 322.
9. Ein Fall von Schleimhautpapeln auf der Augenbindhaut. Wratsch, 1891, p. 777.
10. Syphilis secondaire de la conjonctive bulbaire. Gaz. hebd. des sc. med. de Bordeaux, 1893, No. 32, p. 382.
11. Syphilitische Schleimhautpapeln der conjunctiva bulbi. Klin. Monatsb. f. Augenhk, 1894, xxxii, p. 200.
12. Les papules syphilitiques de la conjonctive. Gazette Med. de Paris, 1894, No. 17, p. 196.
13. Papuloser Syphilid der Conjunctiva bulbi. Deutsche med. Wochschr., 1895, p. 138.
14. Syphilide papuleuse de la conjonctive, pres du bord de la cornée. Rev. Generale d'opht., 1895, p. 99.
15. Syphilitische Schleimpapeln der conjunctiva. Monatsb. f. prak. Dermatologie, 1895, xx, p. 20.
16. Klin Beiträge zur Kenntniss Seltener Krankheiten der Lidhaut u. Bindehaut. Arch. f. Augenhk., 1900, xlii, p. 8.
17. Weber Syphilitische Papel der Augapfelschleimhaut. Berl. klin. Wochschr., 1900, p. 57.
18. Sulla sifilide oculare. Bollet d'Ocul., 1902, xxi, p. 17.
19. Ueber, Zwei Fälle von Syphilitische Papeln der Conjunctiva bulbi. Arch. f. Augenhk., xlii, p. 259.
20. Plaques muqueses der Augapfelbindehaut. New York Med. Monats., 1902, xiv, p. 34.
21. Stereoskopischen Med. Atlas v. Neisser Plate 611.

Locomotive Built by Metric System.—The opponents of the introduction of the metric system into America, says the *Scientific American*, have asserted that its use would involve endless confusion in our mills in which the operators have been accustomed all their lives to the English measurements. It has been claimed that the change would thoroughly disorganize the working forces, and involve many months of time and a great loss of money. The Baldwin locomotive works, however, has proved that in this case, at least, "an ounce of fact is worth a ton of theory;" for they recently built twenty locomotives for a French railroad, entirely from drawings made on the metric system. The successful execution of such a large order is a strong indorsement of the system as tried under American shop conditions. The *Scientific American* is informed that not only have the locomotives fulfilled strictly the requirements of the specifications, but that the officers of the company were favorably impressed with the working of the new system.

LUPUS ERYTHEMATOSUS.*

M. L. HEIDINGSFELD, M.D.
Dermatologist to Cincinnati Hospital.
CINCINNATI.

The etiology of lupus erythematosus remains to the present day an unsolved dermatologic problem, in spite of the somewhat commonplace character of the affection, and the large number of careful and painstaking researches in that direction. Its frequency, notwithstanding its world-wide distribution, is variously estimated. From the records of the American Dermatologic Association it occurs once in three hundred dermatologic cases in the United States, with marked fluctuations with respect to locality. Voirol[1] reports only one case in every 833 cases of a dermatologic nature in Berlin; Crocker reports one in every 55 cases in private practice in London, and Jadassohn[2] one in every 66 cases (in private practice in Berne), and one in every 78 cases in dispensary and hospital practice.

This seeming disparity is probably more dependent

Fig. 1.—Case 1: Lupus erythematosus of unusually severe type involving the entire right portion of the face, right eye, forehead, nose and a portion of the left cheek, taken at time when patient first presented himself.

on factors pertaining to personal observation, particularly the ease with which the acute disseminated forms, and mild chronic circumscribed types can be mistaken for obscure types of eczema, simple dermatitis, seborrheic eczema, psoriasis, etc., rather than epidemic influences or anything pertaining to locality, clime, altitude, vocation, and allied conditions. My personal experience in private practice for the year 1906, shows that it occurs one-third as frequently as acne vulgaris, as frequently as acne rosacea, slightly more frequently than psoriasis and scabies, seven times as frequently as lupus vulgaris and constitutes 34 per cent. of all dermatologic cases. The relative far greater frequency of tuberculosis cutis makes lupus vulgaris from statistical records a much more frequent affection in Europe than

Fig. 2.—Case 1: Taken three months after favorable treatment. Central areas for the most part healed; border actively spreading at all points.

Fig. 3.—Case 1: Taken two months after treatment with iodin locally and quinin internally, after the method of Hollander, showing unfavorable effects of this treatment. Central area much inflamed, eyelids edematous, congested and everted.

lupus erythematosus, whereas the converse is true in America.

Lupus erythematosus is a noteworthy affection in regard to marked variation in the clinical character of

* Read in the Section on Cutaneous Medicine and Surgery of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907. Some of the illustrations accompanying this article, for lack of space, have been omitted; they will appear in full in the Transactions and in the author's reprints.

1. Deutsche Med., 1903.

2. Mracek Hand-Book, 1904, iii, 385. (This handbook contains a complete bibliography.)

the chronic types. Kaposi's[3] convenient and generally accepted division of the affection into the acute and chronic forms, requires no special comment, and inasmuch as the acute form represents a separate and distinct type, whose direct relationship to the chronic forms remains, as Jadassohn states, one of the most difficult questions with which dermatology has yet to deal, this paper will be devoted purely to the consideration of the chronic forms. Jadassohn describes the average case of chronic type as follows:

Fig. 4.—Case 1: Taken a year and a half after the Hollander treatment; patient blind and presenting horrible disfigurement.

Fig. 5.—Case 2: Lupus erythematosus of same type as Case 1; taken when a portion of the actively spreading border has been surgically removed. Right eye involved as in Case 1.

Lupus erythematosus usually begins as a small light red non-infiltrated macule, with little or no elevation, desquamating early, and presenting after a longer or shorter period of time a differential shading of center and border. The center fades, becomes somewhat depressed, and takes on a whitish, brownish or purplish red discoloration. Its surface becomes smoother, and covered with a scale, whose under surface may contain plugs, which conform to depressions on the surface from which it has been removed. This lesion enlarges slowly and equally in all directions; the center and border differentiate themselves more sharply; after a period of time the lesion assumes a round, flat character, lupus erythematosus discoides, with a faintly depressed flat center, and a more or less broad, sharply circumscribed light or bluish-red border.

Fig. 6.—Case 2: Showing active border entirely removed by surgical extirpation, with cicatrized center; patient well.

Fig. 7.—Early stage of lupus erythematosus, showing hypertrophy of the sebaceous glands (S), of the sweat glands (G), and hair follicle surrounded by a mild degree of reactionary infiltration (I).

This border is slightly elevated and perceptibly though superficially infiltrated. The surface is either smooth, or the follicular orifices are the seat of larger or smaller depressions, and are filled with whitish, sometimes blackish masses, which in the most typical cases resemble comedones. Sometimes the border is covered with a dry whitish, or a greasy yellow-

3. Arch. f. Dermat., 1872, p. 36.

ish or greenish mass of scales, whose under surface is covered with the same characteristic plugs. Pressure with a small, dull instrument produces an impression, and is evidence of an associated localized edema; sometimes the epidermis ruptures to slight pressure, as in lupus vulgaris, and free hemorrhage results. These variations form a series from the most superficial changes with light red discoloration, to the deep infiltrated nodular forms; with desquamation of the mildest type to thick crust formation; with light red to deep blue, and brownish-red discoloration; with faint atrophy to deep scar-like contractures; with telangiectasis of the finest capillaries

Fig. 9.—Sebaceous gland (G), hypertrophied and enveloped with a mass of inflammatory exudate (I). Intermediate magnification.

Fig. 15.—Lupus erythematosus, showing epithelial overgrowth (E), surrounded with inflammatory infiltrate (I) and containing a nest (N) simulating epithelioma.

Fig. 10.—Remnants of previously hypertrophied sebaceous gland (S) (G) completely enveloped and almost entirely destroyed by inflammatory exudate (I); under high power.

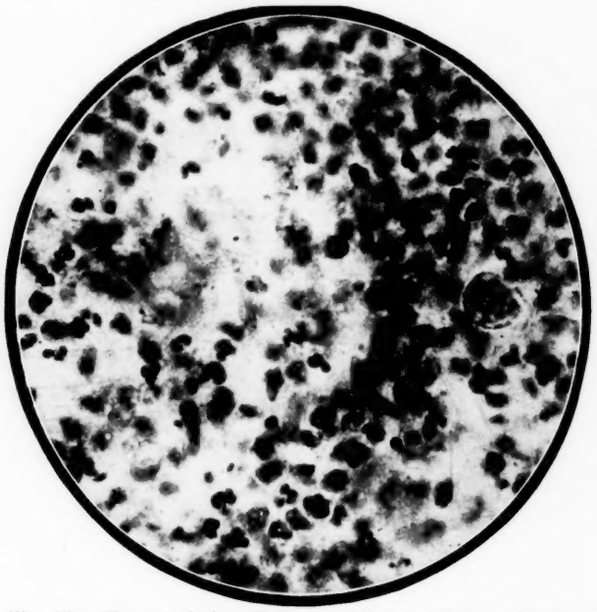

Fig. 19.—Characteristic cellular exudate of lupus erythematosus of deeply stained mononuclear cells containing a large double contoured body simulating blastomycosis.

to vessels of considerable size; with follicular orifices filled with a faint whitish plug; to comedo-like masses. And all these variations may be combined in a single case temporarily, or exist singly for a longer, or shorter, or sometimes an indefinite period of time.

CLINICAL REPORT.

With this brief review I wish to present for clinical consideration two cases of unusually severe nature of almost intractable character, with complications on the part of the conjunctival mucous membranes.

Although the direct transgression of lupus erythematosus from cutaneous surface to mucous membranes has been clinically observed for many years, but little attention has been directed to this phase of the affection until recent years. The mucous membranes most commonly involved are those of the lips, cheeks and palate, and more rarely of the gums, tongue, nose, tonsils, pharynx, larynx and uvula. In a review of some of these cases Jadassohn justly states that correctness of the diagnosis in many is open to serious question. Involvement of the conjunctival mucous membrane is exceedingly rare, the literature revealing but a single instance, a case which is reported by Lustgarten,[4] as occurring in a 20-year-old Russian of 12 years' duration, involving cheeks, scalp, lips and conjunctiva of the lower eyelids. This case was presented to the New York Dermatologic Society, May 25, 1897, and the pecu-

4. Jour. Cut. Dis., 1897, p. 529.

purity of the cicatrices led Klotz to remark that the case bore a deceptive resemblance to lupus vulgaris. Lustgarten describes the lesion of the eye as a conjunctivitis, which Jadassohn believes could have been a mere coincident, as in the case of hypopyon, and inflammation of the lids observed in Abraham's case of lupus erythematosus involving the hand and face.

CLINICAL REPORT.

CASE 1.—*History.*—Mr. C. P., watchmaker, aged 66 years, married, presented himself for examination March 22, 1904. He was born in Switzerland, served in the army and field, has always been robust and well; his family history was excellent. He came to America and married in this country at an early age, and had never had any venereal disease; his wife, aged 64, is robust and well, and the only children born to them, two married daughters, were in excellent health. His present ailment dates back eight to nine years, and began on the chin and nose in the form of two small red patches, and spread thence perceptibly to the left and right cheeks.

Examination.—Physical examination and inspection showed the patient to be in excellent health, and bearing no evidence of any associated or previous form of ailment. The entire right cheek, nose, chin, and a broad area entirely encircling the right eye, extending well over the lower half of the right forehead, was the seat of an active area of inflammation, with a sharp, circumscribed, well defined, slightly but superficially infiltrated border, somewhat elevated above the surrounding normal skin and the fading central portion of the lesion (Fig. 1). The slightly elevated border sloped gradually towards the fading center, which in areas was smooth, white, glistening in appearance, and free from hair, scales and inflammatory products. The remainder was covered with adherent scales, whose under surface on removal was studded with numerous slender, sharp-pointed plugs, with a distribution corresponding to their insertion into the patulous orifices of ducts and hair follicles. The border was covered with yellowish-red and grayish-black greasy concretions soft and edematous to pressure, somewhat painful and prone to hemorrhage on removal. The inflamed area was studded with many comedo-like bodies. The left cheek was the seat of a smooth depressed atrophic-looking cicatrix, evidence of former activity and presenting signs of recurring activity in the form of small, circumscribed, freshly inflamed areas. The hair of the mustache and beard had almost entirely disappeared with the exception of a small tuft on the chin. The mucous membrane of the upper and lower lip, and the orifice of the nose was involved by the direct extension of the process and was reddened and inflamed, granular in appearance, and covered with bran-like scales. The mucous membrane of the right eye was congested in color, irregularly eroded, granular and edematous in appearance and markedly ectropic. Both upper and lower lids of this eye and the lower lid of the left eye were the seats of active lesions. The eyelashes had entirely disappeared from the right eye and nearly all the hairs from the right eyebrow.

Treatment.—From March 22 to June 11, 1904, patient was subjected to the Roentgen ray exposures, supplemented with topical applications of the following formula:

℞.	gm.	
Resorcin	10|0	3iii
Gum tragacanth	2|0	grs. xxxv
Glycerin	5|0	fl. 3iss
Distilled water	100|0	fl. 3iv

During this brief period of time showed the greatest degree of improvement ever manifested. The central area became smooth, paler in color, and all evidence of active inflammation disappeared save from the border, and a few small circumscribed points, over the chin, lips and eyelids. The inflamed, infiltrated border became greatly narrowed, less inflamed, infiltrated, elevated and crust covered. The patient felt greatly relieved and less annoyed with the previous intolerable itching and burning, except for increased irritation on the parts of the eyes. The border, however, steadily advanced in circumference, and transgressed to the upper eyelid of the left eye, and well beyond that of the right eye to the border of the scalp (Fig. 2). This treatment was continued without material change with the same degree of improvement until Oct. 25, 1904, when iodin was applied locally and quinin administered internally after the method of Hollander,[5] reported at the time to possess almost specific properties. This iodin-quinin treatment was promptly followed by an intense and painful reaction, first manifested by an increased redness, and painful swelling of the inflamed borders, the small patch on the chin, and the muco-cutaneous border of the nasal orifices, accompanied with pronounced itching, burning and pain (Fig. 3). This treatment was continued in spite of its increased unpleasant effects until November 16, when the extreme discomfort of the patient, the increased inflamed condition of the border, and an inflammatory reaction on the part of the cicatrized areas, discouraged further therapeutic attempts in this special direction. Immediately following the suspension of this treatment two-thirds of the area originally involved became intensely inflamed, in spite of the free use of antiphlogistic remedies in the form of lotions, ointments and cold compresses, and covered with scales, crusts and studded with painful fissures and small abscesses. Severe conjunctivitis of both eyes, and an iritis of the right eye were added to the list of unpleasant complications (Fig. 4). This inflammation improved slowly under prolonged treatment, but the condition never regained the former degree of improvement attained by the use of the *x*-ray with local applications of resorcin. Other measures which were subsequently more or less unsuccessfully employed were Lassar paste, mercurial plaster, high frequency, ethyl chlorid, and the ultra-violet rays from a mercury quartz lamp. The eyelids of each eye were edematous, ectropic and eroded with granular ulcerations for more than a year after they became primarily involved. Later they became cicatricially contracted, and the eyes inflamed from prolonged exposure and irritation. Blindness occurred in the right in 1905, and in the left eye in October, 1906. Blindness and weakness following the prolonged irritation to which the patient has been subjected, have confined him to his bed since October, 1906. March 17, 1907, the disease was still active, chiefly at the ever-spreading border, which had advanced behind the right ear, an inch or more into the scalp, and to the middle of the neck. The intervening area was atrophic and cicatrized, covered with loosely adherent scales, and the nose and ears pinched and distorted by irregular cicatricial contraction, and studded with small patches of relapsing inflammation. Nodules have always been absent, and patient has never responded to a tuberculin reaction.

CASE 2.—*History.*—H. D., aged 38 years, carriage designer, presented himself March 2, 1907. Two years prior to the date of his first visit patient noted a small red patch on the right cheek, below the eye. It soon became covered with yellowish scales and soft greasy crusts, and steadily increased in size with a fading center and with increased inflammation at the borders, in spite of painstaking attention on the part of the patient and his physicians.

Examination.—On the date of the first examination the patient presented a striking similarity to that originally presented by Case 1. The entire right cheek was the seat of a smooth depressed cicatricial-like atrophy, surrounded by a slightly elevated, infiltrated, inflamed border, involving the lower eyelid, the inner and outer canthus of the right eye, and it extended in an irregular circle over the cheek, upper lip, to the right ala of the nose; the other end of the imperfectly closed circle extended from the inner canthus of the right eye to the bridge and for a short distance over the crest of the nose. The mucous membrane of the upper lip and lower eyelid were reddened, edematous, and studded with granular ulcerations. Numerous comedo-like bodies studded merely that portion of the bridge and crest of the nose which was the site of the inflamed and actively spreading border. The receding edges of the rest of the border was the seat of numerous loosely adherent scales, which on removal were covered on their under surface with numerous characteristic plugs. The border was covered with yellowish and greenish crusts, irregularly fissured by numerous crevices, and rather firmly adherent to the underlying soft mushy edematous tissue. Patient experienced

5. Monatschr. f. Prak. Dermat., xxxv, p. 105; Dermat. Ztschr., 1901, p. 42.

no symptoms with exception of occasional itching, most marked over the lower eyelid of the right eye. The case bore a striking resemblance to Case 1 and showed a similar degree of activity, inflammation and distribution.

Treatment.—Inasmuch as it gave every indication of ultimately inducing the same degree of involvement, and producing the same unfortunate sequelæ, prompt, active and stern measures were deemed necessary to cope with the situation. In view of the fact that all signs of active inflammation had disappeared from the center, measures were directed chiefly to the inflamed and actively spreading border. March 3 about one-sixth of the spreading border on the outer lower aspect of the cheek was freely excised and the edges carefully sutured with silkworm gut and horsehair. Union by primary intention was promptly obtained. On March 15 a second similar area was likewise excised with similar results. The friable character of the inflamed tissue, which had the consistence of moist brown paper, offered the only difficulty to these operations, and rendered its careful extirpation irksome and tedious. The extirpation of the border seemed to arrest effectually the progress of the disease at these points. March 21 the spreading border at the inner canthus of the right eye, and over the right half of the bridge of the nose was excised in order to arrest promptly the spread of the disease to the left eye; this proved to be a very irksome and tedious procedure, because of the tension from the wide area removed, and the soft mushy character of the surrounding tissues, the free edges could not be well approximated, and a large area was left to close by granulation, which was successfully accomplished in 14 days' time. A fourth area, involving the upper lip, was surgically removed March 25, and by April 18 the disease seemed effectually arrested at all points save over the eyelids and near the external angle of the right eye. At these points the disease had steadily progressed, the border had become heavier and broader, and had advanced from the lower to the upper eyelid. Although the case bore no clinical or pathologic resemblance to lupus or tuberculosis, 10 minims of 1 to 1,000 sol. tuberculin was given as a test injection March 10 with negative results.

CASE 3.—*History.*—B. C., aged 27, lumber agent, was selected for clinical and pathologic study as a moderate type of lupus erythematosus discoides with a non-fading center, of relatively short duration. The lesion on the occasion of patient's first visit, March 10, 1907, was elliptical in outline, situated near the center of the right cheek and covering an area about the size of a silver dollar. The center of the lesion was well covered with a mass of greenish-brown and grayish-white scales, elevated slightly above the level of the surrounding skin, and studded here and there with comedo-like points. The scales on removal showed characteristic plugs on their under surface, and the corresponding follicles of the skin were widely patulous. The border was slightly inflamed, well defined and actively spreading. The duration of the process was scarcely six months.

Treatment.—Ethyl chlorid and a lotion containing potassium sulphuret and zinc sulphate were first applied without apparent benefit, and on March 20 the posterior third, and on April 4 the anterior third were freely excised; both operations were followed by union by primary intention and with marked improvement; by April 20 the intervening third alone showed activity, and in attenuated form.

CASES 4, 5, and 6.—These were selected as well defined types of moderately severe lupus erythematosus, with fading and partially cicatrized centers; Case 4, a female, aged 37, with three lesions around the mouth of four years' duration, following an attack of herpes labialis; Case 5, a female, aged 41, with lesions of twelve years' duration, having a characteristic bat-wing distribution over nose and cheeks; and Case 6, a male, aged 38, with a lesion of six years' duration the size of a silver dollar over the left cheek. Small areas were extirpated in each of these cases, usually from the actively spreading border, merely for pathologic study, the distribution and involvement precluding a radical extirpation of the diseased area. The patients were variously treated for periods of six months to two years, with the *x*-ray, ultra-violet light, pyrogallic pastes and solutions, ethyl chlorid spray, resorcin, salicylic acid, green soap, mercurial plaster, etc., with moderate improvement, and with indifferent and varied results.

THERAPY.

Lupus erythematosus possesses, in all probability, the most complex therapy of all dermatologic affections, and therefore like all affections which possess a host of remedies there is probably not a single measure of specific character or of unfailing efficacy among the number. It would be insuperable and useless to enumerate all the measures thus far tried and recommended. They comprise all forms of internal, external, local and general measures in the form of alteratives, tonics, eliminants, regulation of diet, changes of scene, altitude, climate and almost every physical and chemical therapeutic agency, in single and combined form, known to dermatologic science. My personal experience leads me to believe that many of the measures recommended possess some favorable therapeutic influence in limited measure and in favorably selected cases.

The acute disseminated types, with sudden onset, febrile disturbance, general malaise, intolerable itching and burning, offer probably the greatest difficulties to successful management during the incipiency and earlier stages of the affection, yield more favorably to bland palliative measures, and end usually in complete recovery in relatively short time. The next more favorable class for treatment are the more chronic, circumscribed types of lupus discoides, characterized by a milder incipiency, with a faintly active and mildly spreading border and fading center. This is the class in which good results are often secured from the host of favorably recommended remedies. These forms often undergo spontaneous recovery; but recurrences with and without treatment are not uncommon.

The least favorable classes are the chronic discoid forms, which show a crust-covered, scaly, inflamed, nonfading center, or a border that is edematous infiltrated, elevated above the level of the surrounding epidermis, which continues to advance steadily and involve adjacent structure and tissues, uninfluenced to any appreciable degree by repressive measures. These are the forms in which the total of all measures have thus far availed little, and have effectually depressed our drooping hopes in what little success has thus far attended every new measures in selected cases.

The futile character of the therapy in special cases and the apparent local nature of the process, impelled me to resort to surgical extirpation, in order to arrest effectually its progress and to spare the surrounding tissues and avoid the serious complications incurred in past experience. This treatment appealed to me as rational and expedient, and was undertaken without the knowledge that Rosenthal,[6] as early as 1892, and B. Merrill Ricketts,[7] independent of Rosenthal in 1893, carried out similar measures, which in more recent times have been advocated by Leredde,[8] Hallopeau and Neisser. In cases in which the lesions present a fading center, in other words, where the duration of the process is self-limited, the removal of the ever actively spreading border seemed alone required. Removal of the border from lesions with active centers does not suffice to arrest the further progress of the disease; these lesions, when sufficiently severe in nature and favorably situated, should be removed in their entirety, if not at one fell

6. Dermat. Ztschr., Ix.
7. Trans. Pan.-Amer. Con., 1893, ii, and N. Y. Med. Jour., 1893, lx, 23.
8. Ann. de Dermat., 1898, p. 262; 1901, p. 548.

stroke, at least by successive steps. My personal experience does not permit me to judge the value of curettement, or the superficial removal of affected area by means of a razor after the method of Ehrmann.

ETIOLOGY.

The etiology of lupus erythematosus in the absence of the discovery of a specific cause, is still a problem for further solution. Opinion is fairly well divided as to whether it possesses a direct or indirect etiologic relationship to the toxemias from tuberculosis, gastrointestinal disturbances, or, in spite of the apparent non-contagious character, it is an infectious disease *per se,* and entirely independent of the former, save for their possible predisposing influences.

I concur with Jadassohn that, in spite of the absence of positive bacteriologic proof, the burden of evidence is in behalf of its infectious nature and external and local character. The character of the lesions, the sharply defined, inflamed spreading borders, the fading centers, their tendency to relapse and multiply, to yield to local measures and surgical intervention, to follow on the heels of slight injuries and abrasions (herpes labialis, furunculosis, burns, etc.), these and many other features speak strongly for its local and infectious nature and external source.

PATHOLOGY.

The pathology of lupus erythematosus in the absence of a special recognized cause and in the presence of a large number of incongruous investigations, forms an interesting study. Unna[9] states that "we can look in vain for a characteristic histologic entity which reflects the clinical characteristics of the affection." The reports (for the most part they are the earlier and later, in point of time) are chiefly at variance with each other in regard to the location of the primary pathologic disturbance; the former impart to the pathology an epidermal character in line with its clinical manifestations; the latter would make a form of granuloma with a distinct focal character emanating from the blood vessels of the corium and give secondary consideration and importance to the associated changes in the epidermis and adjoining tissues. Any obscurity in the pathology of the affection rests chiefly on this dual interpretation, for in other respects, except in some minor details, the findings are uniformly constant and characteristic. The disparity which at present exists in the reports of various investigators depends, I believe, not as Stelwagon[10] states, to the stage and character of activity of the various lesions in question, but to the opposed situation of these viewpoints.

The earliest recognizable changes are in the adnexa of the epidermis, the hair follicles, sebaceous and sudoriferous glands, when these are present, otherwise in the epidermis proper, as can be readily determined by the histologic examination of the spreading border of an active lesion, to its point of gradual transition into normal tissue. Holder[11] states that "so predominant are the changes in the seborrheal glands in the early lesion that it is not surprising that the older observers look on them as the probable starting point of the disease. Had it not been for the fact that the lesion appeared on the palms where sebaceous glands are absent (these views) might have remained unmodified. . . . Kaposi's theory embraced sweat glands as well."

The hair follicles show active mitotic changes, the orifices are filled and distended with keratotic material and form early histologic evidence of the characteristic plugs of later clinical stages. The stimulus promptly exerts its hypertrophic influence on the hair follicle and its sebaceous glands, which increase in circumference and depth. It is not uncommon to observe masses of sebaceous glands hypertrophied to and beyond the layer of coil glands. The latter show endothelial proliferation, cystic dilatation and keratotic plugging of their orifices.

The next step in the pathologic change is a reaction on the part of the tissues, in the form of a plasma cell exudation, which issues for the most part from the immediate vessels of the corium, grouped and collected in character and directed against the abnormal follicles, sebaceous and sudoriferous glands. This circumscribed exudation of small round mononuclear, deeply stained, closely crowded cells, irregularly distributed in groups, immediately arrests the attention of the observer and gives the affection its most characteristic pathologic features. It is almost distinctive of the affection, and for these reasons it has probably been given primary rather than secondary importance. These cells, though undergoing occasional individual degenerative changes, preserve for a long time their original character, and do not show the ordinary cellular changes which are currently observed in tuberculosis, syphilis and simple inflammation. In the next stage of the process the cells begin to crowd closely around the glandular elements, completely envelop them, and gradually effect their disintegration and destruction.

In the more moderate cases the disease expends its energy on the glandular elements, and the process then resolves itself by simple inflammatory change. In the more severe types, in the active relapses over cicatrized areas, surfaces of mucous membrane and over areas which are devoid or poor in glandular elements, the affection expends its energy on the epidermis. The earliest changes show active mitoses in the lower layers of the rete and an active acanthosis. A commensurate plasma exudation follows from the superficial layers of the corium, which directs itself against the proliferating epidermis, which often shows extensive down-growth between the elongated papillæ in finger-like masses, with its cells arranged in nests and whirls, closely simulating an epithelioma. The plasma cells crowd in dense masses to the very tips of the papillæ, and these when cut obliquely give them the appearance of epidermal abscesses.

Both the pathologic and clinical resemblance of these well-defined cases of lupus erythematosus to some of the cases of blastomycetic dermatitis reported in the literature, is striking, and the analogy is more complete from the fact that they frequently contain well-defined, double-contoured bodies. These large double-contoured bodies are frequently observed in the plasma exudate of lupus erythematosus (Neumann,[12] Veiel, Morrison[13] and others). Unna states that "rarely one finds a cell which exceeds in circumference the plasma cells, but with vacuolated (bläschen-formig) nuclei." A moderate polymorphous leucocytic invasion occurs among rete cells and their interstices.

The remaining pathologic changes noted were chiefly of a secondary nature and are for the most in accord with the findings of other investigators. The elastic fibers are as normally preserved and as abundantly pres-

9. Histopathol., p. 1090 and 1097; Monatschr. f. Prak. Dermat., 1890, ii, 134.
10. Med. News, 1893; Text-Book, 1903, p. 712.
11. Jour. Cutan. Dis., 1897, p. 207.
12. Wien. klin. Wochschr., 1898, lxviii, 1137.
13. Arch. f. Dermat. u. Syph., 1886, p. 619.

ent as the general character of the inflammatory changes would permit an approximate estimate. Some slight change can be noted in some of the fibrils distributed to papillary portion of the corium, but, unlike Schoonheid,[14] I am unable to attach any special significance to such a feature. Dilated capillaries and lymph spaces, and occasional endarteritis was frequently observed, but not more than could be currently expected in chronic inflammation of equally severe and prolonged type.

The prolonged congested and edematous character of the lesions and their exceedingly friable nature readily accounted for the numerous thin-walled capillaries and spaces, which were congested with red corpuscles, in various stages of preservation in the superficial layers of the corium, and also probably accounted for some of the irregular spaces, cavities and artefacts (canalization of Unna), which were also observed. No thrombi were observed in any vessels of the corium, as observed by Fordyce and Holder,[15] and nothing was noted which could in any way lead me to infer that the vessels of the corium were the seat of the first pathologic change.

Diffused hemorrhages in various stages of preservation were frequently observed in the upper layers of the corium, and many thin-walled capillaries gorged with one or more columns of well-preserved red corpuscles. The orifices of hair follicles and sudoriferous glands were almost invariably the seat of an extensive endothelial proliferation which filled their cavities to a considerable depth with dense keratinized plugs, or when accidentally or mechanically removed left them widely patulous and imparted a honey-comb appearance to the stratum corneum. The plugging of the sweat ducts was not altogether unlike that observed in porokeratosis. In some of the more severe cases of rather long duration, well-defined giant cells were occasionally observed among the plasma exudate,[16] which in themselves do not differentiate the affection from lupus and syphilis, as frequently stated. The pathologic differentiation of the affection from syphilis and lupus is facile without this distinction. My personal efforts to establish a specific cause by bacterial investigation were attended by uniformly negative results.

SUMMARY.

1. Lupus erythematosus, in the absence of bacteriologic proof, appears to be a local infectious diseases.

2. The course of the disease varies with the special clinical types, and the severe forms do not yield readily to the present complex and inadequate therapeutic measures. The severe types, when favorably situated and sufficiently well circumscribed, should be extirpated; merely the border if the center is undergoing visible signs of retrogression and cicatricial atrophy, otherwise the entire lesion.

3. The conjunctival mucous membrane may become involved by direct extension of the process, and in severe cases blindness may become a complication. The primary pathologic focus appears to be in the epidermis and its adnexa, rather than in the vessels of the corium. The earliest changes are observed in the hair follicles and sebaceous glands when they are present, in the form of an active proliferation of the cellular structure.

4. These in turn call forth a focal exudation of plasma cells from the immediate capillaries, which imparts to the affection a characteristic pathology, and is often accorded primary rather than secondary importance. The sweat glands share in the same process. The process is accompanied with free superficial keratinization and plugging of the orifices. In the absence of hair follicles and glandular elements, the stimulus is primarily directed against the epidermis, resulting in its down- and over-growth, and the resulting plasma exudation is more superficially placed and directed against the lower layer of the epidermis. The inflammatory change ultimately calls forth a connective tissue degeneration.

14. Arch. f. Dermat. u. Syph., liv, 163.
15. Med. Record, 1900, p. 41.
16. Hyde and Montgomery (Text-Book 1904, p. 687) state that there are no giant cells in lupus erythematosus as in lupus. Schoonheid (Arch. f. Derm. u. Syph., liv, p. 16) states that "Riesenzellen waren niemals vorhanden."

ABDOMINAL PAIN.

ESPECIALLY PAIN IN CONNECTION WITH ILEUS.*

K. G. LENNANDER, M.D.
[LL.D., Hon. F.R.C.S., Lond. and Edin.]
UPSALA, SWEDEN.

From my published works it may be gathered that I have not been able to find any abdominal organ, innervated only by the vagus or the sympathetic nerves, which is provided with the sense of pain. Sensations of pain within the abdominal cavity are, according to my experience, transmitted only by the phrenic nerve, the lower six intercostal, the lumbar and the sacral nerves.

My former pupil, M. Ramström,[1] professor of anatomy at Upsala, has given us the first exact description of the course of these nerves within the diaphragm and the peritoneal lining of the anterior abdominal wall. He has shown that some of the older descriptions of the distribution of these nerves are incorrect. For instance, he has not seen any branches of the phrenic nerve running down from the diaphragm to the anterior abdominal wall, nor has he been able to trace a single branch of the phrenic nerve through the suspensory ligament to the capsule of the liver. Similarly he has been unable to find any twigs from the intercostal nerves of the diaphragm which extend to the capsule of the liver.

These anatomic observations of Ramström agree with my own experience in regard to the sensitiveness of the liver. Even a strong faradic or galvanic current applied to the surface of the liver above the gall bladder does not excite pain. In some cases in which the position of the liver was low I have separated the attached surface of the gall bladder as far as the cystic duct without causing any pain, whereas the patient complained as soon as I tilted the liver or dragged on the common bile duct, thus putting the cerebrospinal nerves of the abdominal wall on the stretch. Not only the sense of pain, but also the other modalities of sensibility—pressure, cold and heat—are absent from the liver and gall bladder as well as from the stomach and intestines.

We have often been able to ascertain that viscera involved in disease are quite as insensitive to operative measures and to electric stimuli as are sound ones. Thus the old theory defended by Flourens has been destroyed.

After many investigations—some of which have been attended by the well-known physiologist, Hj. Öhrvall, and several by Professor Ramström as recorder—we had come to the conclusion that the parietal peritoneum of the anterior abdominal wall possesses only the sense of pain, not the senses of pressure, cold and heat. (In

* Read in the Section on Surgery and Anatomy of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

1. Untersuchungen über die Nerven des Diaphragma, Aus den anatomischen Heften, Fr. Merkel und R. Bonnet, 1906, xxx, 92

most cases it is the peritoneum behind the recti muscles from a point 4 to 5 cm. above the umbilicus to a point midway between the umbilicus and the symphysis pubis which has been examined.) Should this view of ours prove correct, it speaks decidedly in favor of the specific character of the nerves of pain. In other words, it goes to prove that the entire parietal peritoneum is provided only with nerves of pain—a condition previously known to exist in the cornea alone.

It is my opinion that all painful sensations within the abdominal cavity are transmitted only by means of the parietal peritoneum and its subserous layer, both of which are richly supplied with cerebrospinal nerves around the whole of the abdominal cavity, possibly with the exception of a small area in front of the vertebral column lying below the crura of the diaphragm and between the two chains of sympathetic nerves. Here, as far as I am aware, no cerebrospinal nerves have as yet been demonstrated,[2] and on a few occasions I have observed that within this area the patient does not respond to hard pressure with a finger or with an instrument, nor, furthermore, does he experience any sensation when a small portion of the mesenteric attachment at this point is put on the stretch.

The opportunity is given during operations of observing that the manipulations which cause pain are those which occasion stretching of the parietal peritoneum as well as of the parietal attachments of the mesenteries. For example, pain is occasioned by the placing or removal of gauze compresses between the viscera and the parietal peritoneum, by the dragging forward of the cecum, of the vermiform appendix, or of any other organ whose normal attachment to the abdominal wall is put on the stretch; and the same principle applies to the stretching of any abdominal adhesions which may connect the viscera with the abdominal wall. On the other hand, should a compress lie between the viscera without coming in contact with the abdominal wall the patient experiences no sensation when it is removed. Similarly no sensation attends the stretching or breaking up of adhesions which have no connection with the abdominal parieties. As far as I can judge from my observations, the parietal peritoneum along the thoracic aperture and around the foramen of Winslow is especially sensitive to stretching, displacement, etc.

A slow and gradual stretching of all the layers of the abdominal wall by ascites or meteorism occasions distress rather than pain, although a high degree of meteorism may be attended by great discomfort. If in a severe case of paresis of the bowel one succeeds in emptying the intestine by means of a typhilitic, a jejunal or gastric fistula, the procedure is followed by such evident relief that the great distress of the previous condition is emphasized. That a maximal degree of rapidly-forming meteorism is an extremely painful condition and one which may rapidly endanger life I have witnessed in the case of a young student who had a coincident volvulus of the ileum and acute dilatation of the stomach. Four hours and a quarter after the appearance of the first symptoms he was pulseless from intense pain attended with a sensation of bursting.[3]

Infectious processes involving the abdominal viscera (ulcerations, acute inflammations, etc.) are attended by lymphangitis and lymphadenitis of the mesenteries. The infection spreads along the lymph-vessels to the subserous tissue of the abdominal wall, and inasmuch as the lymph-vessels follow the course of the arteries the lymphangitis very soon reaches the sides of the aorta, along which it then may continue up to the thoracic cavity. A lymphangitis of the parietal subserous connective tissue greatly increases the sensitiveness (excitability) of the cerebrospinal nerves to any manipulation which occasions pain even under normal circumstances.

All that we know of lymphangitis and lymphadenitis attending affections of the mouth, of the pharynx, of the extremities, etc., applies equally well to corresponding processes within the abdominal cavity. We know, for example, that the severity of pain attending a lymphangitis and lymphadenitis of the above-named regions varies according to different infections, and the same thing is true for the abdominal cavity.

The irritability of the nerves of pain of the parietal peritoneum is much increased even by a slight peritoneal inflammation. In the case of a serous peritonitis (*peritoneale Reizung*) the boundaries of the hyperemic zone of the parietal serosa can be mapped out almost to the centimeter by gentle palpation of the abdominal wall. With further increase of the hyperemia and of the inflammation the sensitiveness is at first almost proportionally increased. The fact that so many infectious processes within the abdominal cavity begin with diffuse abdominal pain may be explained by (1) an increased sensitiveness of a large portion of the parietal peritoneum owing to the lymphangitis or peritonitis, (2) a considerable increase and irregularity of peristaltic action which, in addition to pain, often produces a feeling of sickness, vomiting and one or more actions of the bowels at the commencement of these illnesses. On account of the increased sensitiveness the movements of the stomach and intestines against the parietal peritoneum and the stretching of their respective mesenteries are felt as severe pains. In most cases, however, the general peritoneal irritation soon passes off. Only the part more especially infected remains in a condition of inflammation, and the abdominal pain will become localized at this spot. In those cases where the infection spreads over a large portion of the peritoneal cavity, thus giving rise to a more or less general peritonitis, the pain will diminish as soon as the bowel becomes paretic and the nerve endings of the parietal peritoneum have been more or less destroyed by the severe inflammation.

PAIN IN CONNECTION WITH PERFORATION.

In case of visceral perforation or of an abscess which ruptures into the free abdominal cavity the primary pain is caused by the contents of the organ, or of the abscess, coming into contact with the parietal peritoneum. The severity and character of the pain depends on the nature and quantity of the escaping fluid, the extent to which it immediately comes into contact with the parietal peritoneum, and, lastly, on the intensity of the contractions of the stomach and bowels brought on by the irritation of the peritoneum.

Many clinical observations are explicable if one bears in mind the fact that only the parietal peritoneum can transmit painful sensations. For example, the primary pain occasioned by a duodenal perforation may be referred to the iliac fossa. Again, the paroxysmal pains in connection with a gastric ulcer are elicited by the movements of the stomach, that is to say, by its dragging on a parietal serous membrane which is hyper-

2. Here we find only more or less transversal running nerves uniting both sympathetic chains, and no immediate cerebrospinal nerves.

3. Recovery after Gastrotomy, Reposition of the Ileum, Jejunostomy, Gastrostomy, and Later Gastro-Jejunostomy, Deutsche Zeit. f. Chir., 1906, lxxxv, 151.

esthetic on account of a lymphangitis from an infected ulcer. If the stomach is put at rest by the aid of a jejunostomy the pains cease. Further, in the case of a patient with an inflammatory focus surrounded by small intestines and covered by a thick omentum, pressure on the abdomen will disclose no tenderness, whereas palpation per rectum may cause pain.

THE HYPOTHESES OF NOTHNAGEL AS REGARDS COLIC.

In human beings suffering from intestinal fistulas and to whom no anodyne has been given, sensation of pain can not be evoked by means of chemical, thermic, mechanical or electrical stimuli applied to a portion of the gut lying outside the abdominal cavity as long as the stimulus or contractions which it causes only affect the bowel. When, on the other hand, the contracting bowel drags on adhesions connecting it with the abdominal wall, it at once produces pain.

Both theories of Nothnagel are hereby disproved, for the colicky pain can not be due to pressure on the nerves of the bowel wall in consequence of a tonic spasm of its muscular coat, since the intestinal wall can be crushed with a strong pair of forceps without eliciting any sensation whatsoever. Further, the pain can not be due to anemia of the intestinal wall due to a spasm of its muscular coat, since it is possible by means of electric stimulus to produce so powerful a contraction of the bowel that it becomes of tumor hardness and assumes a yellowish-white color from anemia, without the patient experiencing any sensation even of being touched.

Wilms, in an article[4] and later in his splendid work on ileus (1906), tried to show that all those pains which we are accustomed to term "intestinal colic" are entirely due to stretching of the mesenteric attachments. In my first publication (1901) I made the statement that every distension or contraction of a gut which is attended by a pull on its attachments to the abdominal wall is necessarily painful, as it involves a stretching of the cerebrospinal nerves of the parietal serous and subserous layers. With regard to the duodenum, the duodeno-jejunal flexure, the three flexures of the large intestine, and the most distal part of the ileum, it goes without saying that these portions of the bowel can not contract on their contents in front of an obstruction without giving rise to a powerful dragging of their mesenteries and at the same time a painful stretching of the nerves of sensibility of the parietal serosa. In similar fashion powerful intestinal contractions are bound to involve a painful stretching of the parietal serosa in case the bowel has become fixed to the abdominal wall by adhesions and there exists at the same time some obstruction at this point.

The pains in connection with ileus, due to kinking, volvulus, etc., were thus easy to understand. On the other hand, it was my opinion that the stretching of a high and free mesentery of the small intestine or of the transverse colon could not account for the pain attending a stricture of these parts of the bowel when the stricture has not become adherent to the abdominal wall or in some way fixed, because I could not think that a contraction of the bowel around its contents in front of the stricture could drag on the parietal serosa and subserosa by that high and free mesenterium. Wilms also accounts for the pain in these cases as being only the result of the stretching of the mesentery proximal to the stricture. He considers that a loop of bowel, contracting on its contents at the proximal side of a constriction, endeavors to assume a straight form in the same way as does the gut in sausage-making. The mesentery, however, prevents the bowel from assuming the shape of a straight cylinder. The result is a stretching of the mesentery, and this is what causes the pain. In this connection an observation was made a year ago in a case in which I had to resect more than one meter of the ileum, together with the cecum and a large portion of the colon, this portion of the intestine having been excluded some months previously by means of an ileo-colostomy, on account of multiple fistulas and adhesions which could not be loosened.

Under local and a short ether anesthesia the excluded portion of the bowel was completely freed from all adhesions, only the normal mesenterial attachment being left; the patient being awake, a piece of the ileum about 40 cm. long was clamped and inflated with air. The bowel straightened, the mesentery got stiff and assumed a fan-shaped form. While in this position, standing out from the vertebral column, the patient complained of pain, but this passed off as soon as the bowel was emptied of air and the mesentery was allowed to resume its normal position. The experiment was repeated with a considerably shorter piece of bowel. The result was the same, for the mesentery again became tight and stood out from the vertebral column, occasioning pain. Lastly a piece of the intestine only 5 or 6 cm. long was shut off. Although it was inflated *ad maximum,* causing the serous membrane to burst and the bowel to sink between the two layers of the mesentery for fully 1 cm., the patient felt nothing. As soon, however, as the mesentery was stretched for a few moments with the fingers pain was felt. These observations are in full accordance with the above mentioned view of Wilms as regards the stretching of the mesentery, a view which I believe to be correct.

The pain in connection with a volvulus of the intestine or of an ovarian cyst naturally increases in proportion as the twisting comes on quickly and more parietal peritoneum is drawn into the pedicle.

PAIN CAUSED BY DISPLACEMENT OF THE SEROUS MEMBRANE OF THE ANTERIOR WALL.

On many occasions when performing a laparotomy I have passed into the abdominal cavity a finger covered with a thin, smooth India rubber glove dipped into saline solution and exerted a slight pressure on the anterior abdominal wall. Of this the patient has no perception, but as soon as the serous membrane is displaced against the muscles or aponeuroses of the abdominal wall the patient has a feeling sometimes of touch, more often of pain, according to lesser or greater sensitiveness of the individual, and according to the degree of pressure and displacement employed. When asking the patient, "Have you ever felt anything like this?" I have usually received answers such as these: "It feels like colic;" "It feels as if the bowel is being expanded by wind;" "It's like bad griping pains;" "It is worse than gripes."

Such sensations are occasioned by displacing a small, limited area of the serous membrane at nearly any point of the anterior abdominal wall. On account of these observations I believe that a displacement of the serous lining takes place and gives rise to pain as soon as a loop of intestine contracts on its contents, hardens, rises and presses against the parietal peritoneum. According to my opinion, these pains occur not only in connection with ileus, but also in connection with tem-

4. Münch. med. Wochschr., 1904.

porary irregularities of the peristaltic movement of the bowels in people not suffering from abdominal diseases. I have myself felt these griping pains and I have been strongly inclined to localize the same at the anterior abdominal wall, most often to the left lower quadrant. As a rule I have attributed them to the contractions of the sigmoid flexure.

Here I may mention a case illustrating the displacement of the serous membrane of the anterior abdominal wall at the thoracic aperture. It was brought about by a subserous myoma of the fundus uteri of about the size of a mandarin, in a woman eight or nine months pregnant. She had suddenly been taken ill with severe pains, vomiting and inability to pass flatus. A diagnosis was made by her medical attendant of a twisted ovarian cyst. As soon as the myoma had been removed under local anesthesia all symptoms disappeared. The ovaries were normal. The pregnancy went on to its normal termination. I have record of another patient who had a small subserous myoma of the uterus and in whom, after the seventh month of pregnancy, abdominal pains were produced by any movement. They were felt as a very painful friction and disappeared as soon as the tumor was removed.

If the bowel wall on the proximal side of an obstruction is considerably thickened and the serous coat rough the *Darmsteifung* is naturally attended by a much more extensive displacement of the parietal peritoneum than in the case of a normal intestinal wall. Contrary to Wilms, I consider this factor also to be the cause of the colicky pain which attends intestinal obstruction. I have consequently come to the conclusion that "gripes" are due partly to a stretching of the parietal attachments of the bowel and partly to a displacement of the serous lining of the abdominal wall.

REFLEX RIGIDITY OF THE ABDOMINAL MUSCLES.

The normal response of the abdominal muscles to an acute sensation of pain which originates in the parietal peritoneum or subserous tissue lies in a reflex contraction (*défense musculaire*). In cases of violent and very extensive peritoneal irritation (hyperemia, slight edema) the abdomen assumes a board-like rigidity and the respiration becomes costal in type, for the abdominal muscles and the diaphragm are in a state of tonic contraction. In this way the range of movement of the abdominal organs is greatly diminished and consequently the abdominal pain is greatly lessened. Compare with this the endeavor of patients suffering from severe abdominal pains to get relief by lying on the "belly" or by fixing something tightly round the abdomen. The extension of the reflex muscular rigidity corresponds closely to the area of peritoneal irritation of the parietal serosa. We know little as yet about *défense musculaire* in connection with a mechanical ileus before the onset of peritonitis. It is necessary to observe with care every case of severe colicky pain attending an intestinal obstruction in order to see whether a tonic contraction of the abdominal muscles and diaphragm takes place with the object of diminishing the movements of the bowels and indirectly the severity of the pains.

In acute inflammatory diseases of the abdomen I have not observed the presence of cutaneous hyperalgesia so often as one might expect, especially in consideration of the *"triade douloureuse"* of Dieulafoy (1899) which he regarded as necessary for the diagnosis of an acute appendicitis—cutaneous hyperalgesia, reflex muscular rigidity, tenderness on pressure. Before applying Head's theory of cutaneous hyperalgesia to a given case one ought to consider the question whether in that special case an infectious lymphangitis along the posterior abdominal wall and around the vertebral column might not cause a hyperesthesia of the sensitive nerve trunks and spinal ganglia of that region. It will, of course, be clear to every one that this is only a working hypothesis. In those few cases of acute appendicitis with cutaneous hyperalgesia which have come under my care since I began to pay more attention to this matter I have observed co-existing tenderness on deep pressure in the angle between the twelfth rib and the erector spinæ or somewhat lower down at the border of this muscle.

When considering the *pains connected with infectious diseases of the liver and gall bladder* one has to remember that well-known embryologic facts, as well as my own researches and the investigations of Ramström, all lead to the assumption that the liver, the gall bladder and the extrahepatic bile passages do not possess nerves of pain. One has further to consider the distribution of the lymph vessels from these organs to the posterior abdominal wall and diaphragm as well as their anastomoses with the lymphatics of the duodenum and pancreas. One can then easily understand that infectious diseases of the liver and gall bladder are apt to be followed by spasms of the diaphragm and that the movements of the common bile duct, the duodenum and stomach may be attended by pain. When the gall bladder contracts spasmodically in order to expel its contents there results a stretching of the cystic and common bile ducts and consequently a displacement of the parietal peritoneum and the extremely sensitive retroperitoneal connective tissue around the common bile duct. If a tube has been fixed (water tight) into the gall bladder in a case of cystostomy for cholecystitis, 100 c.c. or more of saline solution may be made to pass from the gall bladder into the duodenum (the biliary passages being free) without the patient feeling anything so long as the solution is being slowly injected into the gall bladder. If the injection is made with a little greater force the patient almost immediately complains of colicky pain in the back.

With a shrunken gall bladder and a very wide common bile duct biliary colic due to the stretching or distension of the common bile duct is inconceivable.

It is quite necessary to consider carefully the account which the patient gives of his pain. Lately a patient of mine suffering from an acute hemorrhagic pancreatitis stated that the attack of pain began with a sensation as if the large blood vessel at the back had burst near the pit of the stomach. The autopsy showed, in addition to the pancreatic hemorrhages, a large retroperitoneal extravasation around the celiac artery and the aorta. One must never forget how difficult it is to localize pain and to how great an extent a correct interpretation of the site of painful sensation is a matter of practice.

SUMMARY.

In estimating abdominal pain, and especially in connection with illnesses giving the symptoms of "ileus," we must bear in mind, briefly, that:

1. Pains do not originate within the abdominal organs which are supplied only by sympathetic fibers and the vagus nerves.

2. All pains originate in the abdominal wall, more especially in the parietal serous membrane and subserous connective tissue structures which are innervated by the cerebrospinal nerves.

3. Stretching of the parietal (mesenteric) attachments of the stomach and intestines, as well as of string or band-like adhesions to the abdominal parietes, invariably elicits pain.

4. The same thing holds true for the displacement of the parietal serosa from its normal relation to the muscles or aponeuroses of the abdominal wall.

5. Most of the diseases connected with ileus are, at their commencement, attended by increased and, as a rule, irregular peristalsis.

6. Chemically different substances, such as the contents of the stomach, gall bladder, intestine or abscesses, give rise to severe pains when they come into contact with a healthy or hyperemic parietal peritoneum (pain due to perforation).

7. Even that form of acute peritonitis which goes under the name of peritoneal irritation (*peritoneale Reizung*) greatly increases the sensitiveness of the parietal serous membrane.

8. The sensitivenss of the parietal peritoneum at first increases *pari passu* with the inflammation, but later decreases again when the inflammation has reached a certain high degree, and in many cases may ultimately cease altogether. (Compare herewith erysipelas of the skin, more especially the gangrenous kind.)

I believe, finally, that we are on the way to completely understand the pains of ileus, though a great amount of work still remains to be done. I consider it to be a very happy thought to bring together anatomists, physiologists, physicians and surgeons for the discussion of this question, and I feel not only greatly honored, but also deeply grateful for the invitation to contribute this introductory paper.

PHYSIOLOGIC OBSERVATIONS ON EXPERIMENTALLY PRODUCED ILEUS.*

W. B. CANNON, M.D., AND F. T. MURPHY, M.D.
BOSTON.

In his discussion of ileus, Nothnagel divides the condition into two classes: 1, Mechanical ileus, in which there is occlusion of the intestine; 2, dynamic ileus, in which there is a syndrome of occlusion of the bowel, without, however, closure of the lumen. The second class of cases occurs whenever the intestine becomes paralyzed, paretic or spastically stenosed.[1] Since an earlier paper in this discussion is concerned with intestinal obstruction, we shall not repeat here our observations, already published,[2] on certain physiologic changes following mechanical closure of the bowel. In that publication we raised the question as to the location of dynamic ileus. Is it of central or peripheral origin? In this research an attempt is made to answer that question.

In dynamic ileus we are dealing directly with a failure of normal peristalsis. True peristalsis, according to Bayliss and Starling, is a coördinated movement dependent on this local reflex. The reflex has its seat, as Magnus has shown,[3] in Auerbach's plexus. Although the alimentary canal can perform its motor functions for some weeks almost normally, when wholly disconnected from the central nervous system,[4] yet, according to Magnus, all spontaneous and reflex movements cease when Auerbach's plexus is removed. Consequently anything which would injure this myenteric plexus would necessarily result in a cessation of peristalsis.

The extrinsic innervation of the stomach and intestines has recently been much clarified by the investigations of Bayliss and Starling and by men working with them and with Langley.[5] It seems fairly certain now that the splanchnic nerves, acting through the sympathetic, are purely inhibitory nerves for the intestine. Concerning the effect of these nerves on the stomach, there is still controversy, but one of us has observed inhibition of gastric peristalsis during emotional excitement when the only connection between the stomach and the central nervous system was the splanchnic supply.[6] Strong impulses through the splanchnic nerves, therefore, may be regarded as another cause of gastric and intestinal inactivity.

From physiologic studies, therefore, we should expect failure of peristalsis to follow inhibitory impulses through the splanchnic nerves, or to result from injuries or disturbances to the myenteric plexus, or from trauma to the muscles themselves. In other words, the cause of dynamic ileus may be general, by way of the central nervous system, or it may be local, in the inefficacy of Auerbach's plexus or the muscles which that plexus controls.

DYNAMIC ILEUS THROUGH THE CENTRAL NERVOUS SYSTEM.

The Effects of General Asthenia.—When the nervous connections between the alimentary canal and the central system are intact, nothing is more remarkable than the responsiveness of the canal to conditions of general asthenia. In the asthenia of animals afflicted with "distemper," for example, food will lie in the stomach or intestine all day without the slightest sign of a peristaltic wave passing over it. There is total stoppage of the motor activity of the digestive organs.

The condition is quite different when the canal is disconnected from the spinal cord and brain. In such a state, with the stomach and small intestine entirely deprived of their extrinsic innervation, these organs have been observed exhibiting their normal activities, although the animal was to the last degree exhausted and toneless. In one instance an animal, very limp and apathetic, was fed by stomach tube 25 c.c. finely divided lean beef mixed with 5 gm. subnitrate of bismuth, reduced to a mush by the addition of water. Inspection by means of the Roentgen rays at intervals of an hour for five hours revealed normal peristalsis of the stomach and normal motor activity of the small intestine at each observation. At the end of five hours, although the animal was moribund, gastric peristalsis was still prominent. At the end of the sixth hour the animal was dead. Autopsy revealed a deep septic process in the muscles of the neck.

If the nervous connections with the cord and brain had been intact in this case, the persistence of the activity of the alimentary canal, according to our experience, would not have been seen. The general bodily condition, therefore, may affect the canal unfavorably through the nervous system. The pathway of these unfavorable influences is probably the splanchnic, for normal activi-

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* From the Laboratory of Physiology in Harvard Medical School.

1. Nothnagels Diseases of the Intestine and Peritoneum, English translation, Philadelphia, 1904, p. 377.
2. Cannon and Murphy: Ann. of Surgery, 1906, xliii, 512.
3. Magnus: Archiv. f. die gesammte Physiol., 1904, cii, 362.
4. Cannon (W. B.): American Jour. of Physiol., 1906, xvii, 429.
5. Jour. of Physiol., 1899, xxiv, 99; 1901, xxvi, 125; May, 1904, xxxi, 260; Elliott and Barclay-Smith, 1904, xxxi, 272.
6. Cannon (W. B.): American Jour. of Physiol., 1905, xiii, xxii.

ties have been observed in the state of asthenia when only splanchnic nerves had been severed and the vagi were still intact.

The Effect of Splanchnic Reflexes.—Nothnagel reports a case of dynamic ileus resulting from inflammation of an undescended testicle and states that inflamed hydrocele, contusions of the testicle, operations on piles and suppurations in the abdominal region have all been known to produce symptoms of occlusion of the intestine. Kocher, on the contrary, seems inclined to discredit the idea that dynamic ileus is a purely functional disturbance. "Little mechanical obstacles," he declares, "lie at the bottom of the majority of cases of so-called dynamic ileus."[7]

It is possible to prove the existence of reflex dynamic ileus by means of experiment. Male animals (cats) were chosen for observation. They were treated exactly as described in a former series of experiments[2]—in general, etherized for a half-hour, and within an hour after stopping the anesthetic given 25 c.c. mashed potato mixed with 5 gm. bismuth subnitrate. The discharge of food from the stomach and its passage through the small intestine were then determined by Roentgen ray observations at the end of the first half-hour and at hourly intervals for six hours. As described in the earlier investigations, the rate of passage from the stomach was judged from the total length of the shadows of the food in the small intestine at the regular times of observation. The passage through the small intestine could be judged from the first appearance of a shadow in the large intestine.

In testing experimentally reflex dynamic ileus, the testicles were crushed during the half-hour of etherization. In order to learn the effect of this procedure it is necessary to compare the results of observations in these cases with the results of observations after the animals were merely etherized for a half-hour. In the following figures are presented in centimeters the aggregate length of the food masses in the small intestine at the regular times of observation, after a half-hour's etherization, and after the same period of etherization during which the testicles were crushed. These are typical cases.[8]

	Time in Hours.						
	½	1	2	3	4	5	6
	cm.	cm.	cm.	cm.	cm.	cm.	cm.
Etherized half hour	3	11	17	21.5	22.5	13.5	12
Etherized ½ hour, testicles crushed	0	0	0	0	0	8	15

It will be noted in this comparison that, although the discharge from the stomach was not entirely checked, the operation plus the etherization retarded the exit for a number of hours. Furthermore, the discharge under these circumstances was characteristically slow. The movement through the small intestine was likewise very sluggish; in the condition of etherization alone, material reaches the large intestine in four or five hours; in the condition of etherization plus injury to the testicles, in only one case out of ten did the material pass the small intestine within six hours. How much more time was required for the passage was not determined.

It may be contended that the condition presented by these animals was not true ileus paralyticus; that, although the food was moving slowly from the stomach and through the small intestine, yet it was moving. The initial failure of peristalsis for a number of hours must, however, be regarded as indicative. These animals were vigorous animals; the injury done them was done under ether when nervous conduction may be much depressed. Doubtless if the operation were superposed on a state of bodily weakness, or were performed without anesthesia, or were long continued as in states of inflammation —thus simulating common conditions in human beings —the results would have been even more pronounced.

As previously stated, recent physiologic investigations make it probable that reflex inhibitions of peristalsis are mediated through the splanchnic nerves. The question as to whether these nerves are in the cases above described the pathways of inhibitory impulses can be tested experimentally. Animals were operated on aseptically, and the splanchnic nerves cut on both sides of the body. After recovery from this operation, usually within a week, the animals were again etherized and the testicles crushed. The motor activities of the alimentary canal were then tested in the manner already explained. The following figures offer a comparison between the results when the testicles of the normal animal are crushed and when they are crushed in an animal with splanchnic nerves severed. These figures, from typical cases, represent in centimeters the aggregate length of the food masses in the small intestine at the regular times of observation:

	Time in Hours.						
	½	1	2	3	4	5	6
	cm.	cm.	cm.	cm.	cm.	cm.	cm.
Ether, testicles crushed	0	0	0	0	0	8	15
Splanchnics cut, ether, testicles crushed	16	29	33	27	22	10	4

Evidently the severing of the splanchnic nerves has entirely obviated the inhibition of activity due to crushing of the testicle. Indeed, the results typically secured in these cases compare very favorably with the results from normal unetherized animals, as the following figures show:

	Time in Hours.						
	½	1	2	3	4	5	6
	cm.	cm.	cm.	cm.	cm.	cm.	cm.
Normal (average, 4 cases)	10	31	43	25	21	13	8
Splanchnics cut, ether, testicles crushed (average 4 cases)	13.5	28	34	28	24	15	10

The discharge from the stomach is thus made practically normal by cutting the splanchnic nerves. And the passage through the small intestine is also reduced to two or three hours (approximately the normal rate for potato in these animals) merely by abolishing splanchnic impulses.

From the observations above recorded we may conclude that not only can ileus paralyticus be produced without mechanical changes in or about the intestinal wall, but that the condition is one of inhibition, an inhibition conveyed to the stomach and intestines through the splanchnic nerves.

THE QUESTION OF LOCAL PARALYSIS.

In an earlier research,[2] duration of etherization, exposure of the stomach and intestines to the air, cooling and handling these organs, were studied as possible factors in the production of postoperative paralysis. Etherization, either one-half or one and one-half hours, was found not to delay to any marked degree the discharge of food from the stomach; exposure to the air and unusual cooling of the gut likewise caused no noteworthy delay; but most striking effects were seen after handling the digestive organs. Even when the stomach and intestines were handled most gently, either under warm salt solution or within the peritoneal cavity, no movements of the stomach were seen and no discharge into the intes-

7. Mitthellungen aus dem Grenzgebieten der Med. und Chir., 1899, iv, 201.

8. Once a female cat was used; the abdomen was opened during the half hour of etherization and the ovaries crushed. Results tallied closely with those observed after crushing the testicles.

tine for three full hours after the feeding. And after the first departure of food from the stomach the discharge continued very slowly. The passage through the small intestine was also retarded; in only one case did the food (potato) appear in the large intestine before the end of seven hours of observation.

When the organs were removed from the abdomen and handled gently in air, the movement of the food was retarded to a greater degree than when they were fingered in the peritoneal cavity or under warm normal salt solution. So great was the retardation that in one case not all the food had passed into the large intestine from the ileum even twenty-six hours after feeding. Indeed, the condition then was that reached normally in about five hours.

Rougher treatment in air, such as stripping the gut between the fingers, resulted in increased inertia of the stomach and extreme sluggishness of the small intestine. In one case of harsh manipulation no food had left the stomach at the end of seven hours. And in another case the food had not yet reached the large intestine twenty-four hours after the feeding (the food used, as already noted, begins to appear there normally at the end of two or three hours); only a slight amount of food was in the small intestine, and the stomach was still well filled.

It should be remembered that the subjects of these observations were vigorous normal animals. Doubtless the factors which act to check the movements of the alimentary canal must have a greatly increased effect when the strength has been sapped and the bodily vigor lost.

Manipulation of the stomach and intestine, therefore, even gently and under the most favorable circumstances, produced in our experiments much greater effect in the direction of postoperative inactivity than any other of the factors under control during operation. Whether manipulation produces its effects directly on the mechanisms in the wall of the canal or indirectly through reflex inhibitions from the central nervous system was left undetermined.

The question of the source of this postoperative inactivity can be put to experimental test. If it is due to reflex inhibition, manipulation after the splanchnic nerves are cut ought to have no effect, since the pathway for inhibitory impulses is destroyed. On the other hand, if after severance of the splanchnics manipulation still produces inactivity, the result can be attributed to local disturbance.

Animals in which the splanchnic nerves had been severed aseptically several days before were treated in the same manner as the normal animals on which the earlier observations were made. They were etherized a half-hour and during that time the abdomen was opened and the stomach and intestines, under aseptic precautions, were stripped between the fingers, i. e., roughly handled. Within an hour after etherization ceased the animals were given 25 c.c. potato plus 5 gm. subnitrate made at the regular intervals after the feeding.

In one animal there was no discharge from the stomach during seven hours of observation, though the next day the stomach was largely empty. Another animal vomited the gastric contents after the first hour. In a third case nothing left the stomach during the first six hours, and then the outgo was slow. In still another instance food began to pass the pylorus at the end of an hour, but the exit was very slow, and at the end of seven hours no food had reached the large intestine. These results correspond closely to the results following manipulation of the stomach and intestines of normal animals. In both there is a marked retardation of the discharge of food from the stomach and a sluggish condition of the small intestine. The effects of handling, therefore, are not necessarily the consequence of reflex inhibitions from the spinal cord, but can be entirely explained as disturbances of the local mechanisms in the wall of the gut.[9]

DISTINCTION BETWEEN LOCAL AND SPINAL ORIGIN OF DYNAMIC ILEUS.

From the foregoing evidence it is clear that in any case of dynamic ileus a distinction must be made between the inactivity due to inhibitory impulses from the central nervous system and inactivity due to local disturbances in the gastrointestinal wall. It is of the first importance to determine the source of the inactivity. For example, in our experiments stretching of the gut by forcible injection causes a prolonged inhibition of movement. Section of the gut and suture likewise cause a local blocking, the food is for some time not forced into the region of the operation. Peritonitis may be accompanied by total cessation of gastrointestinal activity. In these various cases where is the seat of the trouble? Is it local or imposed from the spinal cord? Unfortunately our experiments have not proceeded far enough to give us definite answers to these questions.

The practical importance of the distinction between intrinsic and extrinsic inhibition of the alimentary canal will be recognized in considering the possibilities of treatment. As already made clear, the normal stomach and intestine are capable of carrying on their motor activities quite independent of the central nervous system. Consequently, if the inhibition is extrinsic, any agent that will check the delivery of inhibitory impulses from the cord to the canal would permit the canal to resume its normal functioning. If, on the other hand, the inactivity is the direct result of local disturbance this same agent would have no effect in promoting the restoration of peristalsis. It is questionable, indeed, whether the canal, inactive from local cause, can be made to exhibit normal peristalsis by the application of any agent until there has been at least a partial recovery of the normal condition.

In our experiments some attempts have been made to stimulate the bowel to move normally after local disturbance. The stomach and intestines were manipulated in the manner usually resulting in paralysis. After recovery from etherization the animals were given the same amount of potato mixed with bismuth subnitrate as was given in other cases, but the mixture was moistened with 4 c.c. tincture of aloes. Tincture of aloes has recently been shown to be a particularly effective agent in promoting peristalsis in the cat.[10] In these animals with manipulated gastrointestinal tract no improvement of peristalsis could be ascribed to the aloes. The figures obtained at the regular times of observation corresponded closely to those obtained from animals in which the canal was merely handled and no drug was given with the food.

On the other hand, when the inhibition is imposed from the spinal cord it should be possible to start the

9. Recently Meltzer and Auer (Proceedings of the Society for Experimental Biology and Medicine, 1907, iv, 39), have shown that cecal peristalsis of the rabbit is inhibited by dissecting the skin over the abdomen. This is reflex inhibition, for it does not occur if the spinal cord is previously destroyed. On the other hand, previous destruction of the cord does not prevent the direct inhibition of peristalsis observed when the abdomen is opened. These observations and our own are in perfect agreement.

10. Pfaff and Nelson: THE JOURNAL A. M. A., 1906, xlvii, 1819.

movements of the canal by depressing the action of the cord or by blocking the impulses from the splanchnics. As maintained by Craig[11] and others, salicylate of physostigmin acts favorably as a remedy for postoperative paresis in clinical cases. In all probability its usefulness is restricted to cases in which the paresis is of central origin, for its physiologic action includes depression of the functions of the spinal cord and powerful stimulation of the stomach and intestines[12]—precisely the requirements for obviating reflex inhibition of the alimentary canal.

We have tested the action of physostigmin salicylate experimentally on animals. A sixtieth of a grain in a freshly-prepared solution was given subcutaneously at various times with relation to the etherization and crushing of the testicles—two hours before etherization, an hour before etherization, during the anesthesia, and subsequently while the food was stagnant in the stomach. In our experience giving physostigmin at any time before the operation or during the anesthesia resulted in no perceptible improvement of the passage of food through the alimentary canal. But when the drug was given afterward during the period of stagnation there resulted a very marked, but only temporary, increase of peristalsis. In the following figures a comparison is presented between the amount of food in the small intestine in two typical cases, one in which the testicles were crushed, the other in which the testicles were crushed and a sixtieth of a grain of physostigmin administered about two hours after the feeding. The figures give in centimeters the aggregate length of the food masses in the small intestine at the times indicated:

	Time in Hours.						
	½	1	2	3	4	5	6
	cm.	cm.	cm.	cm.	cm.	cm.	cm.
Ether, testicles crushed....	0	0	0	0	0	8	15
Ether, testicles crushed, physostigmin at two hours...	0	0	0	32	38	41	37

It is clear from the figures for the third hour that the administration of the drug at the second hour had produced suddenly a very abundant discharge from the stomach into the intestine. Nor was gastric peristalsis alone stimulated; intestinal peristalsis was also remarkably active—lively movements of the food masses in the intestinal coils were seen on all sides. But at the fourth hour and thereafter all was quiet again. As shown by the figures, the discharge from the stomach did not continue to be abundant and the food in the intestinal coils lay almost entirely quiescent; at the end of six hours no food had reached the large intestine. The physostigmin, therefore, although given in an amount sufficient to cause the cat's muscles to twitch, had only a temporary effect. Within two hours this action had apparently ceased. These results raise a question as to the reasonableness of attributing great efficacy to a single dose of physostigmin in clinical cases, when the passage of feces occurred from eight hours to three days after the administration of the drug. It would seem as if physostigmin, because of its relatively brief action, could not properly be held accountable for the results. Be that as it may, however, there is no doubt that, temporarily at least, the salicylate of physostigmin will destroy reflex inhibition of the alimentary canal and cause the normal movements to proceed.

In conclusion it should be stated that the present report of our work is preliminary and that many features need still to be made clear. The point we wish to emphasize is the distinction between dynamic ileus of spinal origin and dynamic ileus of local origin in the wall of the gut. The various conditions which affect one or the other of these causes of inactivity have not yet been experimentally studied, but on such a study depends the possibility of rational judgment in any particular case.

11. American Jour. of Obst. and Dis. Women and Children, 1904, xlix, p. 449.
12. Cushny (A. R.): Pharmacology and Therapeutics, Philadelphia, 1901, 317, 319.

THE SYMPTOMS AND DIAGNOSIS OF STRANGULATION OF THE INTESTINE.*

JOHN B. ROBERTS, A.M., M.D.
Professor of Surgery in the Philadelphia Polyclinic.
PHILADELPHIA.

The development of the operative surgery of the abdomen has created in the minds of surgeons such an assurance of success that they are liable to neglect the study of diagnosis and to resort too cheerily to exploratory investigation of lesions in this cavity. Physicians, on the other hand, being more or less unfamiliar with the innocuousness of aseptic inspection of the abdominal contents, lose valuable time in fruitless efforts to overcome mechanical impediments to peristalsis. Patients would have a fuller measure of scientific aid in their dire extremity, if surgeons could profit by frequent opportunity to see cases of intestinal obstruction early enough to study initial symptoms. On the other hand, many lives would undoubtedly be saved, if physicians realized the futility of wasting time in the effort to settle diagnostic problems, when the fecal current and perhaps the blood circulation are stopped by mechanical causes, demanding instant manipulative removal.

Such conditions demand the best consideration of philosophical minds, alert to appreciate the importance of both medical and surgical skill. Good "team" work on the part of a physician and a surgeon, or the services of a practitioner who has had both medical and surgical training, will give the suffering patient the best chance for recovery. Some of us, who now practice surgery as a specialty, would often be most unhappy, if we did not possess, through previous experience in internal medicine, some ability to weigh our own surgical opinions and even to review critically the judgments of our medical colleagues.

The symptoms of intestinal obstruction and intestinal strangulation are necessarily similar, because strangulation is usually a complication of obstruction. It is an interference with the vascular and lymphatic circulation in the wall of the bowel and in the mesentery. It may occur as an incident in the history of acute or chronic obstruction. In the former the strangulation may arise coincidently with the obstruction. In both it may arise only after the obstruction has existed for a considerable time. Occasionally, as in some hernias, a portion only of the wall of the intestinal tube may be strangulated with no real occlusion of the caliber of the gut. Yet the influence exerted on the muscular coat of the bowel produces, as a rule, very promptly a symptom-complex practically identical with that of obstruction. These symptoms usually continue until the strangulation is relieved or the patient dies; sometimes, however, local gangrene occurs, an artificial anus is formed and the patient recovers.

Ignorance of the causes of the symptoms formerly

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termed ileus, or iliac passion, no longer compels the use of such indefinite terms. The Greek verb εἰλεῖν, from which comes εἰλεός, is practically equivalent in a medical sense to the Latin volvo. The term ileum, therefore, should be restricted to that lesion of the bowel in which the intestine is rolled, twisted or knotted, so as to produce symptoms of obstruction. Ileus and volvulus should be synonymous terms. The word volvulus was formerly rather loosely employed, though it is not now.

Inspection of English medical dictionaries will be convincing as to the need for this restriction of the use of the word ileus or its complete elimination from medical nomenclature. A number of mechanical disarrangements of the intestinal tube may cause colic, constipation and vomiting, but there is no good etymologic or other reason for classing them all under the name ileus. As hernia, from ἔρνος, a sprout, should be applied to a protrusion, so ileus, from εἰλεός, should be applied to twisting, and to twisting only, of the bowel. The word should not be applied to intestinal obstruction, strangulation or colic from any other cause.

It is often difficult to make a differential diagnosis between intestinal obstruction and such conditions as lead colic, flatulent colic, arsenical poisoning, acute enteritis, Asiatic cholera, acute pancreatitis, perforated ulcer of the stomach, thrombosis and embolism of the mesenteric arteries, torsion of the great omentum, inflamed undescended testicle, paralysis of the intestinal muscles, hysteria, acute appendicitis and peritonitis. The examination of the patient should be repeated from hour to hour, in order that no one of the rapidly developing diagnostic points be overlooked. It is only in the earliest stages of the affection that an exact diagnosis between the different forms of obstruction is likely to be feasible. The development of tympanites as a symptom or of peritonitis as a secondary condition often destroys the possibility of an accurate investigation except by exploratory investigation.

Strangulation not only closes the caliber of the bowel, so as to prevent the movement of the fecal current and the gaseous contents, but it also severely irritates the nerves in the mesentery and in the gut and compresses the blood and lymph channels in those structures. The result is that grave arterial anemia and venous hyperemia are produced, and gangrene and perforation may occur. It is a more or less elastic construction and may be defined as obstruction plus circulatory interference.

An external hernia at the inguinal, femoral or umbilical opening may become strangulated. So may a hernia through one of the more unusual orifices, such as the obturator foramen, the sciatic notch, and the small openings occasionally found in the linea alba, between the navel and the ensiform cartilage. The medical attendant should never neglect to explore these recognized seats of external hernia whenever intestinal obstruction is under consideration. A small femoral hernia may be concealed by enlarged, overlying lymph nodes. In children a scrotal hernia may be translucent and suggest hydrocele. The rectum must always be examined with the finger or proctoscope, to exclude the existence of impaction of feces or stenosis of the lower bowel from tumor. Thomas Bryant called attention years ago to a ballooning, or dilatation, of the rectum, when stenosis of the lumen of the descending or sigmoid colon exists. This symptom may lead to the discovery of an occlusion from carcinoma or other cause too high to be felt with the finger inserted through the anus.

The results of strangulated gut are practically the same, whatever the anatomic lesion causing the constriction. It makes little difference in the general aspect of the case whether the strangling be due to compression by, entanglement in, or twists, kinks or knottings from omphalo-mesenteric vestiges or peritonitic adhesions; to incarceration in congenital or acquired apertures or fissures; to internal hernias in the foramen of Winslow, the paracecal fossæ the intersigmoid space, the duodenojejunal region, or through diaphragmatic openings; or to an external hernia incompletely reduced or not reduced at all. A mere tear in the parietal peritoneum may afford an opportunity for the intestine to slip under it and become strangulated.

The symptoms do not in the main vary much from the characteristic complex when the strangulation arises secondarily to a chronic obstruction of the bowel. Here, however, there is usually discoverable a history of a series of antecedent events pointing to stenosis or obturation.

The diagnosis of probable strangulation, primary as well as secondary, must rest on the sudden onset of great pain, vomiting, absolute stoppage of feces and gas, and intense prostration or collapse. These symptoms may arise immediately after the receipt of a blow on the abdomen, or their advent may follow sudden violent muscular exertion, straining at stool or active purgation from diarrhea or a cathartic.

The pain is generally the first symptom. It is violent, continuous and occasionally increased by paroxysmal colic. It is practically always a part of the symptom-complex, unless gangrene has occurred and the patient has gone into collapse and stupor. It may be localized at or near the site of strangulation and may be relieved somewhat by pressure. In volvulus the pain is likely to be more diffused than in internal strangulation by a band or the like. This initial pain may in time be followed by the secondary pain which comes from the development of peritonitis, provided that peritonitis develops ere the death of the patient or his relief by treatment. The pain of peritonitis is not relieved by pressure. It is possible that a slight degree of tenderness on pressure may be present from increased sensitiveness of the bowel, when no peritonitis has as yet developed. This is probably due to the violent contractions of which the muscular tunic of the bowel has been the seat.

The advent of pain is quickly followed by vomiting, due probably to the traction on the peritoneum at the point of strangulation. The vomiting under rare circumstances may precede the access of pain. It usually occurs within the first twenty-four hours and persists until death, though it may cease shortly before that issue. It is accompanied in very many instances by nausea, hiccough and eructations of gas. The vomitus is at first the contents of the stomach; then the intestinal fluids, colored by bile so as to be brownish, yellowish or pea-soup-like, are ejected, and finally fecal vomiting is established. Fecal vomiting need not occur. The seat of the obstruction may be too high in the intestinal canal or the patient may succumb to shock before it has appeared. The time of its appearance may vary from two to five or more days. Death is not uncommon in two or three days, though there are cases that run a more chronic course.

The complete obliteration of the caliber of the gut and the reflex influence exerted by strangulation induce absolute constipation. This obstipation appears as soon as the strangulation occurs and no discharge whatever of feces or flatus takes place. Even when the strangu-

lation affects the ileum the contents of the large bowel are not expelled. There are but very few exceptions to this rule of absolute constipation. Peristalsis below the site of the lesion seems to be inhibited by reflex action. The contents of the rectum and lower colon may be washed out with enemas, but there is as a rule no spontaneous evacuation of intestinal gases or of feces. This constipation may be difficult to differentiate from the paralytic intestinal inertia, which may follow incision of the abdominal muscles and manipulation of the bowels during the operative treatment of various abdominal and pelvic lesions. Such inhibition of peristalsis may occur without the existence of postoperative peritonitis.

Coincident with this more or less characteristic symptomatic triad of strangulation a most profound collapse occurs. This prostration is evidenced by a frequent small pulse, pallor of the skin, low temperature, anxious facies, sunken eyes and the congested internal viscera of shock. Death may take place as a result of this condition, which is probably due to the reflex inhibition of the heart's action and a consequent lowered blood pressure. The immediate cause of the fatal issue is probably anemia of the nervous centers. Similar profound depression of the vital forces occurs in other forms of acute intestinal obstruction, but it is especially noticeable in instances of obstruction with strangulation. The exact form of the strangulation does not seem to exert much difference in the degree of shock. In this form of shock, as in surgical shock from other lesions, the patient remains conscious except in the agony of death.

The severity of symptoms depends on the degree of the strangulation and the amount of bowel and mesentery deprived of its normal circulation. The tighter the strangulation and the greater the extent of bowel involved the more urgent the symptoms. Death from shock, from general exhaustion, caused by the pain and vomiting, or from peritonitis is to be expected early in severe cases. Death is likely to occur before gangrene and perforation take place.

Tympanites occurs only to a moderate degree, as a rule, in strangulation from hernia and bands, but is apt to be marked in volvulus. When, however, peritonitis has developed as a secondary complication the distension becomes general and may be very great. The meteorism is localized at first in the involved loop of bowel and the portion of intestine just above the strangulation. It should be remembered that an extremely distended gut does not give a tympanitic note on percussion, but a low note more like that obtained when the chest is percussed over normal lung.

If no localized tympanites is seen it is probable that the strangulation is incomplete or that the intestinal gases are escaping through minute perforations in the bowel wall. It is the venous stagnation in the bowel from the interference with circulation that causes the localized meteorism due to unabsorbed gases. This localized tympanites differs from the distension that arises from putrefaction of stagnating intestinal contents, and occurs more promptly than the latter.

The locally distended bowel in strangulation changes the shape of the abdomen; hence the least asymmetry should be carefully studied. The bulging of the flanks laterally, the puffing up of the umbilical region in which lies the small intestine, or the distended outline of the colon or of the sigmoid flexure may give a hint, if the surgeon sees the case early and is alert. The strangulated loop is anchored in one spot, and as it becomes distended changes the aspect of the abdominal surface. The rigid loop may be detected by palpation, because it feels tense and hard. General anesthesia may, by relaxing the abdominal muscle, aid in enabling this fact to be discovered by the examiner's hand.

A study of the urine, feces and blood may perhaps aid in establishing a diagnosis of the existence of obstruction, if not in actually helping the surgeon to a conclusion as to the occurrence of actual strangulation. The discovery of a large amount of indican in the urine during the first two or three days seems to indicate either acute peritonitis or occlusion of the small intestine. Hence when the other symptoms exclude acute peritonitis, intestinal obstruction may tentatively be assumed to exist in the small bowel, if collateral evidence points to interference with the permeability of the intestinal tube. According to Hammeter, peritonitis, multiple stenosis in both small and large intestine, and a chronic stenosis in the large bowel may show excessive indicanuria. These possibilities, therefore, modify the value of this symptom. If excessive indicanuria is absent, acute general peritonitis is probably not present. A deficiency in the amount of urine excreted is considered by some writers to be attributable to tightness of the constriction of the caliber of the gut. Others maintain that it simply indicates that, in a case of obstruction, the stenotic lesion is high in the small intestine. Albuminuria and hematuria have little diagnostic significance.

It is unfortunate that little can be learned by inspection of the feces, except occasionally in obstruction in the rectum or the descending and sigmoid colon, when the shape of the fecal masses may be of aid. Blood and pus in the stools, especially the former, have a limited significance. Small amounts of blood are discharged from the rectum in some cases of volvulus, but not in internal strangulation unconnected with volvulus, malignant disease or invagination. In invagination bloody stools are often a marked characteristic.

Leucocytosis is of possible value, when markedly developed within forty-eight to seventy-two hours after the beginning of obstructive symptoms. Its occurrence in various suppurative abdominal conditions without obstruction destroys its value, when found only at a later period.

Fever occurring early in a suspicious case tends to make logical the diagnosis of peritonitis rather than obstruction or strangulation. Its development later may be due to an incidental peritonitis complicating strangulation or any other form of obstruction, but it should be recollected that peritonitis may occur without fever.

The diagnostic value of peritoneal fluids obtained by aspiration, of intubation and inflation of the colon, of auscultation of the abdomen, of the antiperistaltic progress of minute particles from the rectum to the stomach, where they are found by lavage, and of the use of the *x*-ray to locate masses of dammed up feces made demonstrable by bismuth subnitrate should be tested in appropriate cases.

The diagnosis of obstruction is always a matter of supreme importance, because the patient must be relieved spontaneously or by treatment. Otherwise death will occur. Prompt relief is necessary in all cases, but promptness is absolutely essential in the crisis caused by strangulation. Often the diagnosis can only be made by a process of exclusion. If accurate diagnosis is unattainable, operation must be at once undertaken. Exploratory operation is frequently a confession of ignor-

ance, but such confession is an evidence of sincere concern for the welfare of the patient.

Let it be remembered that there may be more than one point of obstruction or strangulation, especially in cases secondary to former attacks of peritonitis. Do not forget that visible intestinal peristalsis with paroxysmal rigidity and stiffening of definite loops of intestine, after percussion of the abdominal wall, are absent in volvulus (axial rotation) and internal hernia with strangulation, unless these conditions are engrafted on chronic obstruction. This symptom may be of diagnostic value, however, to establish the presence of intestinal obstruction in chronic forms of occlusion, where the muscular coat has become hypertrophied.

Recollect the absence of peristalsis and the possible occurrence of adynamic obstruction in appendicitis, renal and biliary colic, and peritonitis, which are due to inhibition of power in the musculature of the intestine. In these instances pain and sensitiveness may prevent the passage of feces along the intestinal canal and simulate obstruction. There is perhaps a sort of neurotic constipation here, such as may occur in healthy persons who have not access to decent toilet facilities.

When the surgeon has concluded that strangulated intestine is causing the symptoms, he should endeavor to make up his mind as to the location of the trouble and the character of the strangulating process.

The most common site of strangulating lesions, not associated with internal hernia, is the right lower quadrant of the abdomen. The lower portion of the ileum and the cecal region, therefore, should be inspected first. Volvulus, however, is most apt to occur in the sigmoid colon, especially in the aged. Intussusception is not particularly common in the ileocecal region, but it is perhaps most frequently found in some portion of the colon. It is the more frequent disease of the young. Strangulative lesions, being usually acute, are more difficult of differentiation than those other obstructive lesions which are chronic.

The change in contour of the belly, due to tympany, will sometimes aid in settling the site, as has already been stated. In obese patients this determination becomes a matter of increased difficulty. It must be recollected that the sigmoid colon twisted on its axis may fill from distension the abdominal cavity in an astonishing way and extend even to the right hypochondrium. In such cases, however, the left flank also is apt to be convex from distension. The upper lumbar region, on both sides behind, will give on percussion, it is said, a long deep note instead of the normal high and flat note, when the obstruction is in the sigmoid or descending colon. This change in percussion note in the back will be found only on the right side, when the occluding lesion is in the transverse colon or at the splenic flexure. This sign seems to have some value.

The pain is less severe in volvulus than in strangulation by omphalo-mesenteric remains, or bands; and sometimes the pain of volvulus may be referred to the back. In volvulus high up in the small bowel there may occur frequent evacuations from the bowels. This is unlike internal hernia-form strangulation and strangulation from bands, which are accompanied by absolute constipation. Occasionally a little blood may be passed with the feces in cases of volvulus, especially of the sigmoid flexure. Rectal tenesmus is an indication of volvulus being the cause of the obstruction, rather than strangulation from other causes. Fecal vomiting is not common in volvulus, but it is common in strangulation from entanglement under bands and in openings. Volvulus is more apt to be preceded by habitual constipation, and causes less intense collapse than strangulation from bands.

A previous history of peritonitis would point rather to strangulation by bands, or kinks or knots, than to strangulation from volvulus, were it not a fact that peritonitis may cause narrowing of the mesentery from infiltration and cicatricial changes which tend to make axial rotation (volvulus) occur more readily.

The differential diagnosis is farther obscured at times by the circumstance that volvulus of the small intestines and strangulation by bands and cords may bo coexistent.

My final word is: If the diagnosis can not be established with a fair degree of certainty within twenty-four hours, or at most forty-eight hours, open the abdomen aseptically and inspect its contents.

313 South Seventeenth Street.

[THIS SYMPOSIUM ON ILEUS TO BE CONTINUED. THE DISCUSSION WILL FOLLOW THE LAST PAPER.]

THE OCCURRENCE OF TYPHOID BACILLI IN THE STOOLS OF TYPHOID PATIENTS.

WITH A DISCUSSION OF THE PATHOGENESIS OF TYPHOID FEVER.*

DRS. J. H. PRATT, F. W. PEABODY AND A. D. LONG.

BOSTON.

The view is generally held that the intestinal contents in typhoid fever are swarming with typhoid bacilli. The fact that many investigators have often had difficulty in isolating *Bacillus typhosus* from the stools of undoubted cases of typhoid fever has been attributed to imperfect technical methods. Some observations made by one of us seemed to indicate that the reason typhoid bacilli were not obtained from the stools during the height of the disease might be due, not to faulty bacteriologic methods, but to the fact that the typhoid micro-organisms were either absent from the feces or present in extremely small numbers.

The studies here presented extend over two years. About 75 per cent. of the patients had fever at the time of the examination. All were clinically typhoid fever. In only one instance was the agglutination test persistently negative. It is probable that this was a case of infection with *Bacillus fœcalis alkalingenes*. Each day the sickest patients to be found in the wards were selected for the examination. For the opportunity of making this study we are indebted to the visiting physicians of the Massachusetts General Hospital.

When Gaffky[1] reported, in 1884, that he had cultivated on artificial media the specific micro-organism of typhoid fever, he made no claim that he could isolate it from the intestinal contents. In 13 cases he obtained the typhoid bacillus from the spleen and in one case from the liver. Pfeiffer,[2] in 1885, was the first to assert that typhoid bacilli were present in the stools. As he knew nothing about *Bacillus coli* and did not fully

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* From the Laboratory of Clinical Pathology, Harvard University (Director, Prof. R. H. Fitz). This investigation was begun in the Laboratory of Bacteriology. The facilities of the bacteriologic department were available through the courtesy of Prof. H. C. Ernst.

1. Mitt. a. d. Kaiserlich. Gesundheits, 1884, ii, 372.
2. Deutsche med. Wochschr., 1885, p. 500.

identify the bacilli he isolated, his results can not be accepted. Merkel and Goldschmidt,[3] Karlinski[4] and Wiltschaur[5] claimed they could demonstrate typhoid bacilli in the stools without difficulty. Karlinski,[4] in 1889, stated that he obtained positive results in all of the 21 cases he examined. As none of these investigators differentiated the micro-organisms they obtained from *Bacillus coli*, their observations are of no value. It is interesting to note that Wiltschaur[5] was the first to state that the number of typhoid bacilli in the stools is very small. Wathelet[6] showed that the methods of the earlier investigators were inadequate. He made a bacteriologic examination in 12 cases of typhoid fever, and reported that he was able to isolate the typhoid bacillus in only 4 of them. He studied about six stools from each patient. He examined in all 600 colonies that developed on ordinary gelatin and only 10 of these were typhoid colonies. Even his results can not be accepted, as he did not state how he identified the micro-organisms he isolated as typhoid bacilli. G. Roux, writing in Bouchard's *Traité de Pathologie* as late as 1896, stated that it was impossible to isolate *Bacillus typhosus* from the intestinal contents owing to the constant presence of large numbers of colon bacilli. The first trustworthy work dates from the introduction of the glucose fermentation tests and the use of litmus-milk for differentiating colon and typhoid bacilli. Since 1897 the agglutination test has been generally employed.

The first practical medium for separating typhoid from colon bacilli was the iodine-potato-gelatine of Elsner.[7] The publication of his paper, in which he stated that by this new method he had isolated *Bacillus typhosus* from the stools in 15 out of 17 cases attracted much attention. His method was used and indorsed by Brieger,[8] Grawitz,[9] Lazarus[10] and Sterling[11] in Germany, by Pollak[12] in Austria, Jemma[13] in Italy, Chantemesse[14] in France, Horton-Smith[15] in England and Mark Richardson[16] in America. Pollak,[12] Brieger[8] and Lazarus[10] obtained positive results in all the cases they studied. The published reports of these investigators seemed to demonstrate the truth of the old theory that typhoid bacilli developed in enormous numbers in the intestinal contents of typhoid patients. The theory advanced by Metchnikoff and Sanarelli[17] in 1894 seems to have attracted little or no attention. They held that the typhoid bacilli only occasionally wandered from the spleen and mesenteric lymph nodes into the intestines. The work of Brieger,[8] Chantemesse,[14] Lazarus[10] and Sterling[11] must be rejected, however, as these investigators did not clearly differentiate between typhoid and colon bacilli.

Although the method of Elsner[7] in the hands of some investigators yielded excellent results, other bacteriologists found it unsatisfactory and failed to cultivate the typhoid bacillus in many undoubted cases of typhoid fever.

3. Centrbl. f. klin. Med., 1887, p. 393.
4. Centrbl. f. Bakt., 1889, vi, 65.
5. Centrbl. f. Bakt., 1890, vii, 279.
6. Ann. de l'Institut Pasteur, 1895, ix, 253.
7. Ztschr. f. Hygiene, 1896, xxi, 25.
8. Deutsche med. Wochschr., 1895, xxi, 835.
9. Centrbl. f. Bakt., 1892, xii, 729.
10. Berliner klin. Wochschr., 1895, xlix, 1068.
11. Centrbl. f. Bakt., 1897, xxii, 334.
12. Centrbl. f. innere Med., 1896, p. 785.
13. Münch. med. Wochschr., 1897, xxxiii, 911.
14. Comp. rend. de la Soc. de Biol, 1896, p. 215.
15. Lancet, 1899, p. 1346.
16. Boston Med. and Surg. Jour., 1903, cxlviii, 152.
17. Ann. de l'Institut Pasteur, 1894, viii, 193.

The paper of Hiss,[18] in this country, and the monograph of v. Drigalski and Conradi,[19] in Germany, seem to indicate that the failures of many earlier investigators to isolate typhoid bacilli from the stools were due to the lack of satisfactory methods. Of 19 febrile cases at the New York Hospital, the typhoid bacillus was isolated by Hiss from the stools in 17, that is, 89.5 per cent., by his method. Often the bacilli were present in large number. Higley[20] obtained positive results in 20 out of 21 cases by the use of Hiss's medium. v. Drigalski and Conradi[19] cultivated the typhoid bacillus from the feces by their litmus-lactose-agar method in every one of the 50 cases of typhoid fever they examined. The results of these bacteriologists must be accepted, as they fully identified the micro-organisms they isolated as typhoid bacilli. v. Drigalski,[21] in a later paper, stated that he subsequently examined cases in which he could not demonstrate typhoid bacilli in the stools even at the height of the disease. Klinger[22] was able to isolate *Bacillus typhosus* from typhoid stools in only 25 out of 75 febrile cases (33.3 per cent.) by the v. Drigalski-Conradi method. Krause and Stertz[23] in 33 out of 44 cases, Lipschütz[24] in but 1 out of 17 cases, and C. Cole[25] in 2 among 21. All used the v. Drigalski-Conradi method.

Malachite green media check the growth of colon bacilli, while they allow the development of most strains of typhoid bacilli. Klinger,[22] using malachite green agar as an enriching medium, isolated *Bacillus typhosus* in 26 out of 43 cases. He examined 35 stools during the febrile period by four methods: the v. Drigalski-Conradi, the Endo, the caffein with biologic precipitation, and the enriching malachite green agar. He succeeded by the simultaneous employment of all four methods in cultivating *Bacillus typhosus* 28 times from 35 stools, or in 80 per cent. of the cases.

Before attempting to reconcile the good results that early investigators obtained with imperfect methods and the comparatively poor results of Klinger, Krause and Stertz, Lipschütz and others with improved methods, a summary of our own work will be presented.

METHODS.

We have used for isolating *Bacillus typhosus* from the stools the v. Drigalski-Conradi litmus-lactose plates, Hiss's media and malachite green enriching methods. The medium of v. Drigalski and Conradi permitted a sharp differentiation of typhoid and colon colonies. The typhoid colonies were always bluish and usually small and translucent, looking like drops of dew. Sometimes, however, the first generation of typhoid colonies grown from the feces were large (3 to 4 mm. in size) and opaque. Colon bacilli formed large, opaque, red colonies. We have prepared the v. Drigalski-Conradi medium many times, and the different lots have presented a uniform appearance, and typhoid and colon colonies have always grown in a typical manner.

The failure of many bacteriologists to obtain a satisfactory medium depends on the fact that they did not use the right litmus. We have employed only Kahlbaum's litmus solution, which is made according to the formula of Kubel and Tiemann from specially treated

18. Med. News, 1901, lxxviii, 728.
19. Ztschr. f. Hygiene, 1902, xxxix, 283.
20. Med. News, 1902, lxxx, 585.
21. Centrbl. f. Bakt., 1904, xxxv, No. 6.
22. Inaug. Disser., Strassburg, 1904; republished in Arb. a. d. Kaiserlich. Gesundheit., 1906, xxiv, 35.
23. Ztschr. f. Hygiene, 1903, xliv, 469.
24. Centrbl. f. Bakt., 1904, xxv, 798.
25. Amer. Med., 1906, xi, 480.

litmus stock. This was the preparation of litmus that v. Drigalski and Conradi employed. With no other, according to Bassenge,[26] is there such a sharp differentiation of the color between typhoid and colon colonies. During the early part of this investigation Petri plates of ordinary size were used, later the large plates (15 to 20 cm. in diameter) as recommended by v. Drigalski and Conradi, Hiss's method in our hands was far less satisfactory than that of v. Drigalski and Conradi.

Klinger[22] was able to isolate *Bacillus typhosus* from the stools in a much larger percentage of cases when he used the enriching malachite green method of Lentz and Tietz[27] than when he employed the blue agar of v. Drigalski and Conradi. Our attention was not drawn to the work of Klinger and Lentz and Tietz until the research as originally planned had been completed. It was then decided to make another series of observations, employing malachite green media in addition to the v. Drigalski-Conradi method. Lentz and Tietz's agar was tried and also a new enriching method devised by Peabody and Pratt. The malachite green methods failed to yield as good results as that of v. Drigalski and Conradi. This was probably due to the fact that the strains of the typhoid bacillus present in the intestinal contents of most of our cases were more susceptible to the inhibitory action of malachite green than our stock culture and the typhoid bacilli present in the cases studied by Klinger.

For example, a large v. Drigalski-Conradi plate inoculated November 27 from the feces of the patient Regan showed about 450 typhoid colonies. This particular strain of *Bacillus typhosus,* although present in the feces in large number, failed to develop on the malachite green agar or in the malachite green bouillon. There were nevertheless many bacteria in this specimen of feces that developed luxuriantly on the malachite green agar. On the Lentz and Tietz agar plate at the end of twenty hours were about 250 discrete colonies of nearly uniform size, averaging about 2 mm. in diameter, and a great multitude of minute colonies.. A v. Drigalski-Conradi plate made from this green plate failed to show a single typhoid colony. It is possible that the negative result in this case was due less to the inhibitory action of malachite green on the typhoid bacilli than to the presence of an unusually large number of fecal bacteria capable of developing on malachite green media. Their growth may have choked the typhoid bacilli.

When typhoid bacilli are found in the stools the possibility that they came from urine voided during defecation must be borne in mind. Precautions should always be taken to avoid this source of error.

RESULTS.

1. Pratt in 1905 isolated *Bacillus typhosus* in 6 out of 43 cases—14 per cent.
2. Pratt and Peabody in 1906 isolated *Bacillus typhosus* in 4 out of 31 cases—12 per cent.
3. Pratt and Long in 1906 isolated *Bacillus typhosus* in 7 out of 26 cases—27 per cent.

Total *Bacillus typhosus* isolated in 17 out of 100 cases—17 per cent.

Twenty-one of the cases were examined during convalescence only. All of them were negative. If the febrile cases alone are considered, then the percentage of positive results is increased from 17 to 21 per cent. The results in the first two series of examinations given above were obtained by the v. Drigalski-Conradi method. Pratt and Long used, in addition, the malachite green method. Employing the same medium with which v. Drigalski and Conradi obtained positive results in 100 per cent. of the 50 cases they examined, we succeeded in isolating the typhoid bacillus in only 17 out of 79 febrile cases. Failure to isolate *Bacillus typhosus* from the stools is usually attributed to a faulty method or to poor technic. Our personal experience has convinced us that our low percentage of positive cases is due to the fact that in a great majority of the cases of typhoid fever that we studied the typhoid bacilli were either entirely absent from the stools or present in small number.

In 51 cases 1 stool examined.
In 23 cases 2 stools examined.
In 12 cases 3 stools examined.
In 8 cases 4 stools examined.
In 3 cases 5 stools examined.
In 2 cases 6 stools examined.
In 1 case 12 stools examined.

Total number of stools examined, 206. The typhoid colonies were rarely present on the plates in large number. In the case in which twelve stools were examined the first six were negative. The following is a summary of the bacteriologic tests made in this case:

Sadie F.—November 7. (Sixth week of disease.) v. Drigalski-Conradi plates negative.

November 10. v. Drigalski-Conradi negative.

November 14. v. Drigalski-Conradi negative. Lentz and Tietz negative. v. Drigalski-Conradi negative.

November 16. Malachite green bouillon negative. Lentz and Tietz negative. v. Drigalski-Conradi negative.

November 17. Malachite green bouillon negative. Lentz and Tietz negative. v. Drigalski-Conradi negative.

November 19. Malachite green bouillon negative. Lentz and Tietz negative. v. Drigalski-Conradi negative.

November 20. Temperature 98.8. Malachite green bouillon negative. Lentz and Tietz positive; only three or four blue colonies: *Bacillus typhosus.* v. Drigalski-Conradi negative.

November 22. Malachite green bouillon negative. Lentz and Tietz negative. v. Drigalski-Conradi negative.

November 23. Malachite green bouillon negative. Lentz and Tietz negative. v. Drigalski-Conradi negative.

November 24. Malachite green bouillon negative. Malachite green agar negative. v. Drigalski-Conradi negative.

November 27. Temperature 103.6. Lentz and Tietz negative. v. Drigalski-Conradi positive; seven blue colonies: *Bacillus typhosus.*

In all, 34 examinations were made by the three methods. Only two of these were positive, once the Lentz and Tietz method and once the v. Drigalski-Conradi. Although thousands of colonies grew on the blue plates inoculated from these twelve stools, not over ten or eleven were typhoid colonies. The examinations were made from fresh stools except in a few instances when the specimens were passed twelve to twenty-four hours previously. In only one of our cases did typhoid bacilli persist in the stools in considerable number. At the first examination made November 12, all three methods were negative. The four subsequent examinations were all positive. The detailed report is as follows:

Banks.—November 12. (End of second week.) Malachite green broth negative. Lentz and Tietz negative. v. Drigalski-Conradi negative.

November 15. Temperature 102.8. v. Drigalski-Conradi positive. About twenty-seven blue colonies: *Bacillus typhosus.* Malachite green broth negative for typhoid.

November 16. Temperature 102. Malachite green broth negative. Lentz and Tietz negative. v. Drigalski-Conradi plate shows fifty blue colonies; positive: *Bacillus typhosus.*

November 25. Temperature 100.2. Malachite green broth typhoid. Lentz and Tietz negative. v. Drigalski-Conradi positive; two hundred red colonies to seventy-five large blue colonies: *Bacillus typhosus.*

November 27. Temperature 101. Lentz and Tietz negative. v. Drigalski-Conradi positive; about thirty blue colonies: *Bacillus typhosus.*

26. Deutsche med. Wochschr., 1903, xxix, 675.
27. Münch. med. Wochschr., 1903, xlix, 2139; Klin. Jahrb., 1905, xiv, 495.

Typhoid bacilli may be present in large number in one stool and absent in another stool passed a few hours later. This was well shown in one instance after intestinal hemorrhage. A black formed stool which was shown by the guaiac test to contain blood was examined. Typhoid colonies made up from 70 to 90 per cent. of the total number that developed on three v. Drigalski-Conradi plates. We have never seen such a preponderance of typhoid bacilli in any other stool. The next movement of the bowels consisted of formed masses which were brownish-black externally and yellow internally. Four v. Drigalski-Conradi plates were made. Not a single blue colony developed. Observations made in this case show how quickly typhoid bacilli can disappear from the intestinal contents and also that they develop readily when a favorable culture medium, such as blood, is present.

All but one of our positive cases were still febrile at the time the typhoid bacillus was recovered from the stools. It was found in all stages of the disease from the second to the thirteenth week. Only one case was examined during the first week, as the patients almost invariably enter the hospital later in the disease. Singularly enough, contrary to the theory expressed by Lipschütz[24] and others, no connection could be traced between diarrhea and the presence of typhoid bacilli. It should be stated, however, that typhoid bacilli are present as often in normal solid movements as in unformed feces. Some cases with marked enteritis, as indicated by the passage of fluid stools containing considerable mucus, occurring in small masses intimately mixed throughout the specimen, were examined with negative result.[28]

We have demonstrated repeatedly that the number of typhoid bacilli in some stools must be very small if the micro-organism be present at all. For this purpose fresh stools were taken from cases at the height of the disease and an unusually large number of plates inoculated. In one case twenty v. Drigalski-Conradi plates were made from a thick fluid movement containing much mucus obtained from a patient with high fever. Not a single blue colony developed on any of the plates. Eleven plates containing Hiss's medium were also negative. Eighteen blue plates from a single stool of another undoubted case of typhoid were likewise negative. Dr. Orton at the Boston City Hospital examined fifteen stools from one typhoid patient by Hiss's method without finding *Bacillus typhosus*.

The fact that typhoid bacilli grew abundantly in the stools of one of our cases while they were absent in the majority of the cases may have been due to differences in the strains of the typhoid bacilli. It is now known that different races of typhoid bacilli vary considerably one from another. Our patients came not only from Boston, but from many towns in this part of the state and a few from distant places. The patient in whose stools the greatest number of typhoid bacilli was found lived in Boston, but, of course, he may have been infected with a different strain of typhoid bacilli than any of the other patients.

Through the kindness of Dr. J. Homer Wright we have been able to study the intestinal contents after death in one case. Four days before death the stools were examined by the v. Drigalski-Conradi method and no typhoid bacilli found. At autopsy a blue plate was inoculated with a drop of bile and several hundred typhoid colonies developed, while two large plates inoculated with material from the first part of the jejunum did not yield a single typhoid colony. Material from near the ileocecal valve as well as from the ileum 60 cm. above the cecum was likewise negative. Typhoid bacilli were obtained from the spleen, but not from the heart's blood.

PATHOGENESIS.

Typhoid fever must be regarded as a primary septicemia. Schottmüller[29] pointed this out in 1902. The bacillus has been found in the blood repeatedly by the fourth day of the disease. Kayser[30] cultivated the micro-organisms from the blood with his bile medium in 100 per cent. of the 21 cases he examined during the first week. Working with the Strassburg typhoid commission, Brion and Kayser had the opportunity to make several examinations during the incubation stage, and in no instance recovered *Bacillus typhosus* from the stools. The typhoid bacilli quickly pass from the blood into the bile. When the typhoid bacilli were injected into the ear vein of a rabbit we recovered the micro-organism the following day from the gall bladder. Dörr[31] obtained *Bacillus typhosus* from the bile in less than eight hours after it had been introduced into the circulation. Pratt[32] reported, in 1901, that the typhoid bacillus was cultivated from the gall bladder in 21 out of 30 cases of typhoid fever that came to autopsy at the Boston City Hospital.

The micro-organism becomes widely disseminated throughout the body. In one case Pratt recovered it from the heart's blood, the spleen, the liver, the kidney, a mesenteric lymph node, the gall bladder, the urinary bladder, the right middle ear, and the bone marrow. It has been isolated from the urine in about 25 per cent. of all cases examined (Jacobi,[33] Munch[34]). Petruschky[35] calculated that in one of his cases each c.c. of urine contained 172,000,000 typhoid bacilli, and Gwynn[36] estimated that 500,000,000 per c.c. were present in a case he reported. A number of recent investigators have found typhoid bacilli more often in the urine than in the stools. Among 98 convalescents studied by Herbert,[37] only three showed typhoid bacilli in their stools, while they were present in the urine of eighteen. He found they occurred in the urine in large number, in the stools only in small number. The presence of the typhoid bacilli in rose spots is well known. It has been found repeatedly in the sputum when bronchitis was associated with the typhoid infection (v. Stühlern,[38] Richardson,[39] Dieudonné,[40], v. Drigalski,[21] Jehle[41] and Rau[42]). Dieudonné recovered typhoid bacilli from the sputum seven weeks after fever had disappeared. Undoubted cases of typhoid fever without intestinal lesions have been reported (Opie and Bassett[43]).

28. To answer the inquiry of Dr. W. H. Park made when this paper was presented (see discussion at end of the paper), the effect of diet has been studied and found to have little influence on the occurrence of typhoid bacilli in the feces. There are two medical services in the Massachusetts General Hospital. Patients in the wards of the "East" service are allowed a liberal diet, while on the "West" side the ordinary milk diet is given. Nearly an equal number of positive cases were obtained from the two services, nine from the "East" side and eight from the "West."

29. Münch. med. Wochschr., 1902, xlix, 1561.
30. Münch. med. Wochschr., 1906, liii, 823.
31. Wien. klin. Wochschr., 1905, xviii, 884.
32. Amer. Jour. Med. Sci., 1901, cxxii, 584.
33. Deutsch. Arch. f. klin. Med., 1902, xxii, 442.
34. Semaine Méd., 1904, xxiv, 121.
35. Centrbl. f. Bakt., 1898, xxiii, 577.
36. Johns Hopkins Hosp. Bull., 1899, x, 109.
37. Münch. med. Wochschr., 1904, xi, 472.
38. Centrbl. f. Bakt., 1900, xxvii, 354.
39. Boston Med. and Surg. Jour., 1897, cxxxvii, 433.
40. Centrbl. f. Bakt., 1901, xxx, 481.
41. Wien. klin. Wochschr., 1902, xv, 232.
42. Ztschr. f. Heilkund, 1904, xxv (Inn. Med.), 385.
43. Johns Hopkins Hosp. Bull., 1901, xii, 198.

Jehle[41] observed a case in which there were no characteristic changes in the intestine, and yet the sputum contained typhoid bacilli. Rau isolated *Bacillus typhosus* from the sputum when cultures from the stools were negative.

Baumgarten years ago stated that the typhoid ulcers in the intestines should be regarded as metastases rather than as primary lesions. This theory was revived in 1902 by Schottmüller.[29] If the intestinal lesions were due to the action of typhoid bacilli in the intestine it is difficult to explain the absence of intestinal changes in cases of so-called primary typhoid cholecystitis.[44] In these cases, in spite of the discharge of enormous numbers of typhoid bacilli into the intestine with the bile, there are no intestinal manifestations. Not only are there no intestinal symptoms, but in a fatal case reported by Burlew[45] there were no typhoid ulcers in the intestine, although bile containing typhoid bacilli entered the duodenum freely. In chronic typhoid bacillus carriers, although the typhoid bacillus may be the predominating micro-organism in the intestinal contents, no intestinal disturbances are produced and health is maintained.

It is interesting to note in this connection that in a study by Wennagel[46] in Krehl's clinic, infiltration of the lymphatic tissue of the intestine was found not only in the second, but also in the third, fourth and even fifth week. Necrosis and sloughing of the swollen Peyer's patches were observed as early as the second and as late as the seventh week. He concluded that the characteristic typhoid symptoms are not the result of the intestinal lesions, but the two are co-ordinate. Typhoid fever is thus a general infection in which intestinal alterations can occur. Not only are there cases of typhoid fever without intestinal lesions, but Velich[47] has observed severe typhoid ulceration of the intestine without any disturbance of the health; in other words, without typhoid fever.

In cases of infection during intrauterine life the portal of entry for the typhoid bacilli must have been the umbilical vein. Yet in a case studied by Blumer[48] typhoid bacilli were found in the intestines.

It is probable that the typhoid bacilli in the intestinal contents come chiefly from the bile. There is no evidence that they are thrown off in large numbers from the ulcers as was formerly taught. If so, one would expect to find an increased number in the lower part of the ileum, but Forster and Kayser,[49] as well as v. Drigalski,[21] showed they were less abundant in the lower than in the upper portion of the small intestines. Furthermore, v. Drigalski was often unable to cultivate typhoid bacilli from the surface of the ulcers when they were present on the surrounding mucosa. Councilman[50] says that he has not infrequently been unable to demonstrate bacilli in sections through the base of typhoid ulcers. Mallory[51] found that histologically the lesions were diffuse and bore no intimate relation to the typhoid bacilli.

Typhoid bacilli may be present in the intestinal contents in the usual number when the ulcers have entirely healed, as in a case reported by Jürgens.[52]

The mesenteric and other lymph nodes exhibit hyperplasia and necrosis. Curschmann[53] states that the bronchial lymph nodes are not infrequently markedly swollen in typhoid fever. Even when intestinal lesions were absent the mesenteric lymph nodes, in some cases at least, have been enlarged. Ulceration of the lymph nodules of the intestine is probably due simply to the exposure of the necrotic tissue to the action of the intestinal bacteria. The lesions in the lymph apparatus of the intestine result, as do the lesions in lymphatic structures elsewhere, from the action of the bacteria or their toxins entering these tissues from the circulating blood and not to the invasion of the intestinal wall from its mucous surface.

The sporadic occurrence of chronic typhoid bacilli carriers indicates that the harboring of typhoid bacilli within the intestinal tract for a long period of time depends on the host, not on a particular variety of the parasite. In the study of typhoid fever in Strassburg, Brion and Kayser[54] found only three typhoid bacillus carriers among 200 typhoid patients. The interesting case reported by Soper[55] of the New York cook who infected twenty-six or more individuals illustrates the same point. If the ability to develop in the intestines depended on a peculiar property of the typhoid bacillus, then the individuals she infected would, in turn, have become typhoid bacillus carriers.

The view that the persistence of typhoid bacilli in the stools is due solely to their retention in the gall bladder can not be accepted for the typical cases studied by v. Drigalski,[21] Friedel[56] and others in which the typhoid bacillus are present in almost pure culture in the feces. Typhoid bacilli, as has been pointed out, are present in the bile in practically every case of typhoid fever, and yet, as we have shown in many cases, they are not demonstrable in the stools. In these typhoid bacilli carriers it would seem that either the normal bactericidal power of the intestinal wall is diminished or there is some other change that enables the typhoid bacillus to develop in the intestinal contents. In some cases the typhoid bacillus has largely replaced the colon bacillus (Friedel).

Attention should be called to the fact that in a hemorrhagic stool we examined typhoid bacilli were present in enormous number. It is evident that the blood shed into the intestine furnished favorable conditions for the growth of the typhoid bacillus. The fact that in the next stool passed the same day no typhoid bacilli could be found supports our conclusion that ordinarily the typhoid bacillus does not develop in the intestinal contents. In this opinion we are not alone. Brion and Kayser's[54] observations have convinced them that the intestine is "*nicht der Vegetationsort*" of the typhoid bacilli. It would seem that the number of typhoid bacilli in the intestinal contents must vary greatly in different epidemics of the disease. This is a reasonable explanation for the divergent results obtained by different investigators who have studied the stools by approved methods. Otherwise it is difficult to understand how Elsner,[7] Higley,[20] Pollak[12] and others were able to obtain positive results in a large proportion of their cases by the use of poor methods, while recent investigators working with superior methods have been able to obtain positive results in only a relatively small percentage of cases. Hayashikawa[57] studied the occurrence of typhoid bacilli in the stools in Halle and in Prague.

44. This is probably not a primary condition at all, but secondary to a typhoid septicemia, and represents an instance of typhoid infection in which the chief local lesion is in the gall bladder and not in the intestine.
45. Medicine, 1903, ix, 734.
46. Deutsch. Arch. f. klin. Med., 1906, lxxxvii, 551.
47. Arch. f. Hygiene, 1904, xlix, 113.
48. THE JOURNAL A. M. A., 1901, xxxv, 1674.
49. Münch. med. Wochschr., 1905, p. 1475.
50. Personal communication.
51. Jour. Exper. Med., 1898, iii, 611.
52. Ztschr. f. klin. Med., 1904, lii, 40.
53. Nothnagel's spec. Path. u. Therap., 1898, 227.
54. Deutsch. Arch. f. klin. Med., 1906, lxxxv, 552.
55. THE JOURNAL, A. M. A., 1907, xlviii, 2019.
56. Ztschr. f. Med. Beamte, 1905, xviii, 61.
57. Ztzschr. f. Heilkunde, 1903, xxiv (Inn. Med.), 19.

He concluded that in the type of typhoid fever present in Germany more typhoid bacilli are present in the stools than in the cases that occur in Bohemia.

In our fatal case v. Drigalski-Conradi plates made from different portions of the intestine showed that the great number of typhoid bacilli that entered the duodenum with the bile were destroyed so speedily that none could be demonstrated in the upper part of the jejunum. Forster and Kayser[49] noted that there were more typhoid bacilli in the duodenum than in the ileum. A table published with their paper shows that in one case they found typhoid bacilli absent in the jejunum, although present in the duodenum. They made no comment on this remarkable observation. v. Drigalski[21] found in all his cases that the typhoid bacillus occurred in pure culture in the duodenum. Cushing and Livingood[58] demonstrated several years ago that the normal bacterial flora of the human stomach and duodenum was very meager. Rolly and Liebermeister[59] recently showed that the wall of the duodenum in the rabbit has marked bactericidal power.

Although v. Drigalski found typhoid bacilli present on the inner surface of the stomach in every case he examined at autopsy, it is difficult, in view of the bactericidal power of the gastric mucosa, to believe that the portal of entry of the typhoid bacillus is through the wall of the stomach. Curschmann,[53] however, endorses the view of Stern and Hamburger that the typhoid bacilli are so resistant to weak acids that they are probably able to live in the stomach.[60]

It will be seen that these observations harmonize with one another. In the light of this new knowledge, it can readily be seen that the old theory that the intestine is the portal of entry of the typhoid bacilli can no longer be accepted unless additional evidence can be produced in its favor. If the duodenum is able to destroy the great number of typhoid bacilli that enter with the bile, how is it possible that the relatively few micro-organisms contained in the infected food are able to pass through the duodenum alive and gain an entrance into the body through the solitary lymph nodules and Peyer's patches of the lower part of the ileum? In regard to the place and mode of entry of the typhoid bacilli nothing definite is known aside from the fact that some part of the alimentary tract is infected. Forster has suggested that typhoid bacilli may enter the body through the tonsils. Brion and Kayser found paratyphoid bacilli, and v. Drigalski typhoid bacilli, in the tonsils. These observations aid but little in the solution of this problem, inasmuch as typhoid bacilli have been found in many organs of the body. In the instances cited, entrance to the tonsils from the blood can not be excluded.

CONCLUSIONS.

Typhoid fever is a general infection. The typhoid bacillus is an invasive micro-organism. It is able to develop in the blood and the tissue-juices of the body. It does not develop in the intestinal contents except under unusual conditions. It more frequently occurs in large number in the urine than in the feces. The gall bladder is a favorite habitat of the typhoid bacillus and it develops luxuriantly in the bile. The typhoid bacilli in the intestine come in large part from the bile. They are rapidly destroyed in the duodenum and jejunum, and it has recently been shown that the wall of this portion of the intestine has marked bactericidal power. It is probable that destruction of all the typhoid bacilli that enter with the bile rarely occurs in the lumen of the bowels. The number, however, becomes so greatly diminished that their presence can not be demonstrated in the stools of many patients with typhoid fever. Employing the most approved methods for isolating *Bacillus typhosus* from feces we were able to recover this micro-organism in only 21 per cent. of the febrile cases. Usually when present they occurred only in small number. They were found in greatest number in a stool containing much blood. It is not improbable that if there was a method that permitted the bacteriologic examination of the entire stool for typhoid bacilli as has been devised for detecting the presence of cholera bacilli, a few micro-organisms might be found in every stool. This, however, would not affect our conclusion, that the typhoid bacillus does not find conditions favorable for its growth in the intestinal contents. It is demonstrable in the feces in such a considerable proportion of cases because it is eliminated in great number by the bile. It is also not infrequently excreted in the urine and sputum, and it may be found in these secretions when absent from the stools. The portal of entry of the typhoid bacillus is not known. There is no more evidence in favor of entrance through the intestine than through the tonsils or the gastric mucosa.

STATISTICS COLLECTED FROM THE LITERATURE* IN REGARD TO THE OCCURRENCE OF TYPHOID BACILLI IN THE STOOLS OF TYPHOID PATIENTS.

Investigator.	No. of cases examined	Method Employed	No. of cases in which *B. typhosus* was isolated.
Birt	5	Caffein.	0
Clauditz	8	v. Drigalski-Conradi's.	2
Cole, C	21	v. Drigalski-Conradi's.	2
Courmont and Lacomme	8	Caffein.	0
v. Drigalski and Conradi	50	v. Drigalski-Conradi's.	50
Elsner	17	Elsner's.	15
Ficker and Hoffmann	11	Caffein.	11
Gabritschewsky	2	Gabritschewsky's.	1
Gebauer	16	Piorkowski's.	12
Grawitz	3	Elsner's.	2
Hayashikawa	20	Piorkowski's.	12
Higley	20	Hiss's.	20
Hiss	108	Hiss's.	45
Horton-Smith	16	Elsner's.	4
Jemma	33	Elsner's.	30
Klinger	†75	v. Drigalski-Conradi's.	25
Klinger	75	Endo's.	38
Klinger	43	Lentz and Tietz's malachite green.	26
Krause and Stertz	44	v. Drigalski-Conradi's.	23
Lentz and Tietz	205	Lentz and Tietz's malachite green.	150
Lipschütz	17	v. Drigalski-Conradi's.	1
Mackenna	8	Piorkowski's.	3
Piorkowski	4	Piorkowski's.	4
Pollak	20	Elsner's.	20
Richardson	13	Elsner's.	10
Schütze	5	Piorkowski's.	5

DISCUSSION.

DR. W. H. PARK, New York, said that it is a very simple thing and yet a very important one to have proper materials for the medium. Dr. Park and his co-workers started with malachite

58. Contributions to the Science of Medicine, dedicated by his pupils to W. H. Welch, Baltimore, 1900, p. 543.
59. Deutsch. Arch. f. klin. Med., 1905, lxxxiii, 413.
60. For literature on this subject see Krehl: Pathologische Physiologie, vierte Auflage, Leipzig, 1906, p. 302.

* In addition to the references cited elsewhere, the following may be consulted:
Birt: Brit. Med. Jour., Oct. 28, 1905, p. 1111.
Clauditz: Hyg. Rund., 1904, xiv, 718.
Courmont et Lacomme: Jour. de physiol. et de pathol. générale, 1904, xvi, 287.
Ficker und Hoffmann: Arch. f. Hygiene, 1904, xlix, 257.
Gabritschewsky: Ztschr. f. Hygiene, 1900, xxxv, 104.
Gebauer: Fortschr. d. Med., 1900, ii, 21.
Mackenna: Edinburgh Med. Jour., 1899, vi, 399.
Piorkowski: Berliner klin. Wochschr., 1899, p. 145.
Schütze: Ztschr. f. klin. Med., 1899, xxxviii, 39.
† Febrile.

green and added all sorts of green and then came back to the malachite until they got their methods right. He does not feel that the old media would fail to give the typhoid bacillus when the Rogalsky media will. When a man knows his medium, he can work with that better than with any other. In his laboratory they work a dozen different cases with different media and come out the same because each one knows the medium he is working with. Dr. Park said that in the first place the laboratory man must get the feces early. If six hours elapse one will not get the bacilli. It shows how the feces in a short time destroy the bacilli. Milk makes the bowel contents more suitable for the preservation of the typhoid bacilli until passed externally. He said that different results are often obtained in different epidemics. Dr. Park's theory has been that the bacilli are in the mesenteric glands and Peyer's patches, from which they passed through into the blood and remained in the blood a certain time before dying, because very few of them are found in any cubic centimeter of blood. He thinks that it is rare to find five or six or ten in that quantity. In attempting to make the diagnosis from the feces he and his confrères had results not quite so discouraging as Dr. Pratt. One sample was mislaid and turned up in ten days. It had fermented and run out of the bottle into the paper covering it. Dr. Park examined it and found it almost a pure culture of typhoid bacilli. The feces in that person had been a suitable medium.

DR. A. L. BENEDICT, Buffalo, said that in some experiments with typhoid on the theory that the patient should be fed liberally with cereals as well as milk, and also using treatment along the line suggested by Bouchard, giving animal charcoal and antiseptics. The favorable results have made him consider that clinical typhoid is typhoid plus colon bacillus infection of the intestine, and that from a purely clinical standpoint a typhoid patient who is well fed, who is not milk poisoned, so to speak, and whose toxins are absorbed from the canal by charcoal or restrained by an antiseptic, presents a course of about two weeks and a half, is practically never delirious, shows no marked dangerous symptoms at any time and shows no tendency to hemorrhage or lung involvement. Dr. Benedict has not had a large experience with this treatment, but what he has had is sufficient to suggest that it might really be worth while to go over these cases jointly with pathologists and see how much of clinical typhoid is really typhoid and how much of it is color bacillus infection. The fact that cases that appear clinically like typhoid and abort, or proceed through a course typical of typhoid, are shown to be due to bacilli intermediate between the colon and the typhoid bacillus, is significant in this connection.

DR. H. G. BECK, Baltimore, said that the result of Dr. Pratt's studies naturally suggests the influence that dietetic treatment may have on the development of typhoid organisms in the intestines. In pointing out the relative frequency of typhoid bacilli in the urine as compared to their occurrence in the stools it strikes one that the administration of urinary antiseptics is vastly more important than the administration of intestinal antiseptics. And, furthermore, on account of their more frequent and persistent presence in the urine, it emphasizes the urgent necessity of safeguarding the public by careful instruction to typhoid convalescents, warning them of the danger of spreading typhoid, if they are promiscuous in their habits of voiding urine, or fail to use proper urinary antiseptics.

DR. J. H. PRATT, Boston, said that the point Dr. Park brings up in regard to the possible relation of diet to the occurrence of typhoid bacilli in the stools is important. It is possible that a strict milk diet may influence the growth of *B. typhosus* considerably. As some patients have been on a strict milk diet and others under the care of physicians who employed Dr. Shattuck's liberal diet, Dr. Pratt thinks that there is a sufficient number of cases to throw some light on this problem. In answer to Dr. Benedict's question, he stated that this study has a direct bearing on the use of intestinal antiseptics in the treatment of typhoid fever. The typhoid bacilli multiply in the tissues of the body, not in the intestines. In only one of their hundred cases were the bacilli found persistently in the feces in considerable number. Through the natural defenses of the body the myriads of typhoid bacilli eliminated with the bile are quickly destroyed in the intestines. In the case of typhoid "bacillus carriers," the attempt to free the stools of this micro-organism by the administration of the so-called intestinal antiseptics has failed utterly. Few undoubted cases of infection of the blood with the colon bacillus in typhoid fever have been reported. Blood cultures which have been employed so extensively in the diagnosis of typhoid fever have shown the rarity of colon septicemia

Special Article

THE LITERARY SIDE OF A PHYSICIAN'S LIFE —RONALD ROSS AS A POET.

S. WEIR MITCHELL, M.D.
PHILADELPHIA.

"In Exile, by R. R., 1906, Privately Printed," is the wording on the title page of a little book, whose anonymous author says: "These verses were written in India between the years 1891 and 1899, as a means of relief after the daily labors of a long, scientific research."

I am at liberty to say that the author is Ronald Ross, sometime an English army surgeon, and now professor of tropical diseases in the Liverpool University. The story of the years which step by step led to his final and convincing proof of the causal relation of the mosquito to malarial disease, is to be found in his Nobel lecture given at Stockholm. It is a sad account of labor in the terrible heats of India when the sweat from his forehead rusted the screws of his microscope, or when for days the congested eyes of overuse forbade all study.

His lecture tells modestly of the difficulties this amazing research encountered. In any climate and under the most indulgent conditions, what he did would have been remarkable. In India the lack of sympathy on the part of his military superiors, abrupt army orders, limited means and absence of help seemed ever ready at his happiest approach to success to mock him with delays. He must have felt as if, at times, some malign fate stood ready with obstacles over which no energy, no self-assurance of ultimate victory could prevail. I know of no medical story more interesting, no research which so surely found what it exacted, that heroism back of which lay energizing sense of duty.

The story of this adventurous research has yet to be fully told, as Ross will never tell it. In his lecture and essays he does justice to all concerned, but his was the final victory, the convincing proof. I allude to it here only to present Ronald Ross under another point of view. The weary physician, the exhausted laboratory worker has had a variety of ways of resting or relieving his mind. Physical exercise, some fad of collecting this or that may suffice, but it is an almost unnoticed truth that merely to change the mode of use of the mind competently rests and refreshes. The subject is a tempting one. An apt illustration is the fact that Ronald Ross, when half blind or exhausted with work, turned to verse and sought in a difficult field for the relief that change of mental occupation affords, for the making of good verse is not an easy occupation, as several of the greatest poets have confessed.[1]

This little book is an interesting record of moods of mind, of hope, despair, sorrow and final triumph. It gives one a vivid conception of the effects of exile, personal losses and the torment of tropical conditions on a man with an imagination of high order, somewhat lacking for use in verse that which only much technical training can supply.

There are many verses in this book which exacting self-criticism might have altered or left out. There are some easily amended defects of rhythm—verses which are needlessly obscure; but these concern me little. There are many quatrains of virile power, descriptions of eloquent force or notable passages of insight and deep feeling.

1. Byron, Matthew Arnold and others.

To do justice, quotations should be long, and it is difficult to choose and out of the question to ask the space I should ask in a literary journal. Professor Da Costa wrote years ago an address on the physician in literature and told us, if I am correct in my remembrance, all there was then to say of the physician as a poet. It is fitting that in this, our great journal, there should be recognition of another to whom must be given the double laurel of science and poetry.

The first lines I quote strike the lofty note of very personal verse:

This profit yet remains
  Of exile and the hour
That life in losing gains
  Perhaps a fuller flower.

For on this desert soil
  A blessing comes unsought—
Space for a single toil,
  Time for a single thought.

In humble ways I move
  Myself to little things;
The heated hands I prove;
  I watch the light that springs

Or fades in fevered eyes;
  My only solace here,
Not to be rich or wise
  But to have done with fear.

God sees the silent space
  Where footstep never trod,
And in the lonely place
  The listener is God.

An appeal to this alien sea to sing to him of his English home is a passage of poetic beauty too long to quote, and I content myself unwillingly with this apostrophe to the Indian East and its plague of dust:

O silent sepulchre,
  Great East, disastrous clime;
O grave of things that were;
  O catacombs of time;

Dust—thou art dust, thy sun,
  Thy lord and lord of dust,
Doth stamp thee into one
  Great plain of dust; and dust

Thy heavens, thy nights, thy days;
  Thy temples and thy creeds;
Thy crumbling palaces;
  Thy far forgotten deeds—

Infinite dust. Half living,
  We clothe ourselves in dust
And live, not to be living,
  But only that we must.

The terrors of an East Indian storm, "when great clouds overhead hold high debate of thunder," and at last comes the eagerly desired rain, are so told as to grieve me that I may not quote all of it:

O wilderness of death,
  O desert rent and riven,
Where art thou?—for the breath
  Of heaven hath made thee Heaven.

I know not now these ways;
  The rocky rifts are gone,
Deep-verdured like the braes
  Of blest Avilion.

Here where there were no flowers
  The heavenly waters flow,
And through a thousand bowers
  Unnumbered blossoms blow.

Then follow the verses written on the day when he found the zygotes and the final key which makes it possible to lock the Pandora box of malarial maladies. One envies him this hour of victory:

This day relenting God
  Hath placed within my hand
A wondrous thing; and God
  Be praised. At his command

Seeking His secret deeds
  With tears and toiling breath
I find thy cunning seeds,
  O million-murdering Death.

I know this little thing
  A myriad men will save.
O Death, where is thy sting,
  Thy victory, O Grave!

Before Thy feet I fall,
  Lord, who made high my fate;
For in the mighty small
  Is shown the mighty great.

Clinical Note

A SIMPLE PROOF OF THE CESSATION OF RESPIRATION.

MARSH PITZMAN, M.D.
ST. LOUIS.

In the receiving room of the St. Louis City Hospital the ambulances bring in many patients dead, or apparently so, and it is my duty to determine quickly and definitely whether or not a patient is still living. These patients are pulseless and there is no visible sign of respiration. They appear extremely pallid, the pupils are dilated and there are the other signs of probable death. For the final proof we turn to the respiration. For some reason our reception room was not supplied with a mirror for the familiar breath test, so I was forced to a substitute.

The mouth is closed by hand and then the anterior nares of both sides are filled and covered with fine soapsuds. If respiration has ceased there is absolutely no movement of the bubbles. As it is evident that a patient can not live without breathing, this test continued for a few minutes is an absolute proof of death.

This test is everywhere possible and is more simple and more reliable than the mirror test.

Medical Treatment of Otitic Pyemia.—A recent communication from Politzer's clinic reports operative treatment in 45 cases of otitic pyemia. The jugular vein was ligated and the thrombosed transverse sinus was exposed and evacuated. The fistula into the jugular allows such good drainage that the danger of meningitis is materially reduced. Thirty-four of the patients recovered, 69 and 78 per cent. in the two series. The exclusion of the jugular vein before the operation on the bone seems to reduce the danger of the dissemination of infectious germs from the ear. The jugular vein is now ligated in the clinic as a routine procedure when pyemic fever and chills suggest the possibility of an otitic sinus affection. It has been found especially useful with thrombi adherent to the walls of the sinus, as there is special danger of the loosening of septic particles from the thrombi and their being swept along into the lungs or elsewhere and inducing metastasis. Even when the sinus is completely obstructed by thrombi, ligation of the jugular vein prevents aspiration of air into the vein. Politzer says that any one can ligate the jugular without trouble after a little practice on the cadaver.

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[*For other information see second page following reading matter.*]

SATURDAY, SEPTEMBER 7, 1907.

ASEPTIC SUPPURATION IN RELATION TO ACUTE PLEURITIC EFFUSIONS.

We recently[1] called attention to the important studies of Opie on the conditions under which the leucocytes are able to accomplish their digestive functions and the mechanism by which their activity is held in check. Apparently the finely granular leucocytes contain an enzyme (*leucoprotease*) which is quite different from the protein-digesting enzymes of all the other cells of the body, for the leucocyte enzymes act best in an alkaline medium, while the enzymes of the mononuclear leucocytes and of tissue cells in general are active only in slightly acid solutions. These proteolytic enzymes are held in check under ordinary conditions by the action of the blood serum, which contains some substance which effectively inhibits their activity. If, however, there is an excessive accumulation of leucocytes in a localized area the amount of leucoprotease may be greater than can be inhibited by the relatively small amount of serum present in the same area. As a result the leucocytes undergo self-digestion, the fibrin and dead tissue in the same area will also be digested, and the condition of suppuration is provided. Consequently any condition that causes the presence of large numbers of leucocytes in a circumscribed area where there is necrosis will cause suppuration, and pyogenic bacteria are pyogenic simply because they have at one and the same time necrogenic and chemotactic effects. As we previously pointed out, the injection of chemotactic substances, like iodoform emulsion, into necrotic tissues, such as occur in tuberculous infections, may cause an aseptic suppuration which is often erroneously attributed to pus infection through faulty technic.

On the other hand, there may be accumulations of leucocytes without suppuration when there is present also a large quantity of serum to inhibit them. For example, Opie found[2] that the well-known effect of turpentine in producing suppuration when injected subcutaneously is not usually observed when the turpentine is injected into the pleural cavity, because there is here exuded so much serum that the leucocytic enzymes are held in check. By drawing off most of the serum during the acute stage of the resulting inflammation it was possible to leave the balance in favor of the leucocytes of the exudate, so that they were able to cause a suppurative softening of the fibrin adherent to the pleural surfaces.

These experiments are certainly full of suggestion for the clinician, indicating as they do the possibility that removal of the serous fluid from the chest cavity during the acute stage of a pleuritis may convert a simple serofibrinous into a purulent exudate. Is it not possible that empyema following aspiration of the pleural cavity under careful aseptic precautions is due sometimes to such removal of inhibiting serum, rather than to contamination by the aspirating needle? The analogy to the aseptic suppuration of the tuberculous focus injected with iodoform is a close one. It should be added that Opie found that after the acute stage of the pleural inflammation the number of leucocytes is greatly decreased, so that removal of the serum would then not be likely to lead to suppurative changes in the manner described above.

1. THE JOURNAL, April 20, 1907, p. 1354.
2. Jour. Exp. Medicine, 1907, IX, p. 414.

THE CEREBROSPINAL FLUID IN PARESIS.

The remarkable amount of work which has been done on the cerebrospinal fluid in the past few years may be imagined when it is stated that Kaupe was able to find references to 487 articles bearing on the subject published during the last three years. It is only since 1901, as Cornell[1] points out, that lumbar puncture has been generally used by the neurologist and the psychiatrist, though the worth of the procedure was pointed out by Quincke ten years previously. It is fair to state, however, that since Quincke's original work considerable modifications in the methods of examination have come into vogue, so that at present an examination of the spinal fluid usually consists of a cyto-count, an estimation of the pressure of the fluid, and a determination of the proteid content. Of these three procedures the cyto-count, which includes an estimate of both the number and variety of cells, is most important. Next in importance comes the albumin determination, and finally the estimation of pressure.

A few words on the technic of the cyto-count may not be amiss, for past experience has shown that imperfections in the technic have been responsible for a lack of uniformity in results. The routine practice until recently has been to centrifugalize the fluid, especially when it is clear, as it is in diseases like tabes and general paresis. It is obvious that the process of centrifugalization introduces serious errors into the computation of the cells, for in order to produce comparable results all observers would have to centrifugalize the fluid for the same period of time and at the same rate of speed. Even if this were possible the subsequent manipulations of decanting and spreading could hardly be made uniform enough to form a fair basis for comparison. Furthermore, the process of centrifugalization produces distinct changes in the cells, altering the shape,

1. Amer. Jour. of Insanity, July, 1907.

and probably the staining reactions, of some, and breaking up the more delicate ones. The more recent method of using the pipette of the blood counter, mixing the undiluted spinal fluid with a staining reagent, and counting in a Türck or specially constructed chamber, does away to a great extent with the disturbing factors inherent in the centrifugal method.

The value of examination of the spinal fluid in general paresis, provided the proper technic is followed, has been well shown recently by Cornell. The procedure is of value for two main reasons, one being that an increase in the cells of the spinal fluid is practically always present in paresis and usually absent in the conditions which simulate it, the other being the fact that these changes occur early in the disease, at a time when every scrap of evidence bearing on the nature of a doubtful case is of value. Cornell found that while in normal spinal fluid only from 1 to 4 cells per cubic millimeter are present, in paresis from 12 to 200 or more are found. Small lymphocytes are the most common type of cell, and constitute in many instances from 45 to 95 per cent of the total. Polynuclears are found next in frequency and are apt to be especially abundant after convulsive seizures. Usually, therefore, but not invariably, the cyto-count of general paresis shows a lymphocytosis. Spinal fluids resembling those of general paresis, i. e., showing lymphocytosis and a high proteid content, may be found in cerebral lues, some cases of tabes, and in multiple sclerosis, but are not found in arteriosclerotic psychoses, chronic delusional states, alcoholic psychoses, mania, epilepsy, dementia præcox and the psychoneuroses. Here, as in other tests, a negative finding may be as valuable as a positive one, and the absence of an increase in the cells of the spinal fluid, especially if present at several examinations made at intervals, is very strongly against general paresis.

The question of the origin of the cells in spinal leucocytosis is one which has led to much discussion. Doubtless the centrifugal method caused confusion by distorting the cells. This distortion led to the belief that the cells in the fluid did not come from the blood vessels involved in the paretic process. The use of the undilated and uncentrifugalized fluid seems to show that this is a fallacy, that many of the cells in the fluid are similar to those in the perivascular spaces, and that there is generally a correspondence between the leucocytes of the blood and those of the spinal fluid. This is what would be expected.

So far as paresis is concerned, there seems little doubt then that lumbar puncture is of value in early diagnosis. The value of the negative finding, and the early appearance and constancy of the positive one must be borne in mind. But no results are of value unless based on a careful technic. The procedure requires time and the necessary experience, for, after all, though many wish to regard laboratory methods as short cuts to diagnosis, they usually consume much time and are just as capable of correct or incorrect technic and interpretation as ordinary physical signs.

ANTIDIPHTHERIC SERUM AND POSTDIPHTHERIC PARALYSIS.

Since the introduction of the serum treatment of diphtheria the question of the relationship between this therapeutic procedure and postdiphtheric paralysis has been frequently agitated. As is well known, many have charged to the antitoxin treatment a share in the responsibility for the sequel, some claiming that the paralysis is a direct consequence of the deleterious action of the serum, and it has even been asserted that this sequel is more common in patients treated with antidiphtheric serum than in those treated otherwise.

Rosenau and Anderson,[1] with the excellent facilities afforded in their laboratory, attacked the problem from the experimental side, first presenting the views of clinical statisticians to the effect that antitoxin treatment does not make paralysis more liable to ensue. Guinea-pigs were chosen as subjects for their tests, and paralysis apparently identical with that seen in human beings was induced by a partially neutralized mixture of diphtheria toxin and antidiphtheric serum, so adjusted as to leave the toxon or paralysis-producing constituent of diphtheria toxin free to exert its specific action on the nervous system. Of course it must be admitted that this laboratory artifice may not exactly reproduce what happens in spontaneous diphtheric infection in man, notwithstanding the symptomatic identity of the affection. But even with this, the not uncommon allowance when a laboratory device attempts to reproduce Nature's phenomena, the conclusions reached by Rosenau and Anderson are full of valuable suggestions.

It is shown that in the guinea-pig antitoxin can not influence the diphtheric paralysis after the paralysis has appeared, and that it has no influence in preventing postdiphtheric paralysis if injected shortly before the paralysis develops, but given twenty-four hours after the infection it can save the life of the guinea-pig and greatly modify the paralysis. Antitoxin given in a single large dose forty-eight hours after the infection did not modify the paralysis or save life; 4,000 units failed to modify the paralysis or save the life of guinea-pigs weighing about half a pound. Weight for weight, this corresponds to 400,000 units for a fifty-pound child. Antitoxin given in repeated injections beginning twenty-four or forty-eight hours following infection seemed to have a more favorable effect on the subsequent paralysis than a single injection, while a very small quantity (one unit) of antitoxin given twenty-four hours before or at the time of infection prevented the development of paralysis.

In man one would expect more favorable results from

1. Hygienic Laboratory, U. S. Public Health and Marine-Hospital Service, Bulletin 38, June, 1907.

the use of antitoxin than the work on the guinea-pig indicates, for here one is dealing with an early and malignant form of experimental postdiphtheric paralysis. This grave variety fortunately is rare in man. Further, the entire charge of the poison is injected directly into the tissues of the guinea-pig, while in man the toxin is doubtless elaborated more slowly. We may assume, therefore, that antitoxic serum, given at a somewhat later period than in the work on guinea-pigs, would exert beneficial effects. The fact that one unit of antitoxin prevents paralysis and saves life when administered early, whereas 4,000 units totally fail when administration is delayed forty-eight hours, emphasizes the importance of using this remedy early.

YELLOW FEVER ON THE ISTHMUS OF PANAMA UNDER THE FRENCH REGIME.

Col. W. C. Gorgas, U. S. Army, chief sanitary officer of the Isthmian Canal Commission, publishes some interesting statistics as to the population and deaths from various diseases in the city of Panama from 1883 to 1906 and among the employés of the French Canal Company from 1881 to 1904.[1] The figures are given without comment, and only those relating to yellow fever will be considered here.

In the first place it appears that yellow fever is by no means always present in Panama, at least in a fatal form; thus in the years 1890, '94, '95, '96 and '98 no deaths from that disease were reported, and in 1892 and 1893 only one death each year; in the five consecutive years from 1892 to 1896 inclusive there were only two deaths, and for three consecutive years no death. Among the employés of the French canal companies there were a large number of deaths from yellow fever every year from 1881 to 1889, in which latter year the force employed was greatly reduced. From 1881, when the force was about 1,000, the number of employés steadily increased until it reached a maximum of some 19,000 in 1884, and was maintained at 15,000 to 17,000 until the end of 1888 and the beginning of 1889; the maximum number of deaths from yellow fever in any one year, 308, occurred in 1886. From 1890 to 1895 inclusive the number of employés ranged from 700 to 900; in 1895 it increased to 1,400, in 1896 to 3,700, and was maintained at about that figure until 1899, 1900 and 1901, when it was about 2,000; in 1902 a further reduction to about 1,000 occurred, and this force was maintained until the transfer to the American company in 1904.

Now the interesting point is that notwithstanding the French companies knew nothing about the method of transmission of yellow fever, and the present scientific methods of prevention, there were two periods of six consecutive years each when there were no deaths from yellow fever, 1891 to 1896 inclusive and 1898 to 1903 inclusive; and fourteen consecutive years, 1890 to 1903 inclusive, during which time there were only seven deaths, one in 1890 and six in 1897, and this notwithstanding that there were 454 deaths from yellow fever in Panama in the five years period, 1899 to 1903 inclusive. No explanation of these remarkable figures is given by Colonel Gorgas.

1. Population and deaths from various diseases in the City of Panama, by months and years, from November, 1883, to August, 1906. Number of employés and deaths from various diseases among employés of the French Canal Companies, by months and years, from January, 1881, to April, 1904. W. C. Gorgas, colonel medical corps, U. S. Army, chief sanitary officer. Washington: Government Printing Office, 1906.

FEW APPLICATIONS FOR THE MEDICAL CORPS OF THE ARMY.

We understand that for the examination held July 29 to fill vacancies existing in the medical department of the Army there were only twenty-six applicants. Of these, twelve withdrew after they had made themselves acquainted with the professional and physical qualifications required; fourteen completed the examination, and of these only three were successful. At the previous examination, held April 29, there were seven successful applicants, thus making a total of ten who passed the preliminary examination and will enter the Army Medical School in October for special instruction required before they receive their commissions in the corps. It thus appears that the experience of last year and the preceding years is only repeated. The number of vacancies occurring each year is greater than can be filled from the list of candidates who present themselves. There is no prospect that this condition of affairs will improve until Congress passes legislation, which has so often been urged, to increase the inducements to young medical men to enter the Army medical service. It is hoped that Speaker Cannon, who is responsible for the defeat of the medical department reorganization bill, will at the next session of Congress see the grave injustice he has done and allow the bill to pass.

NEWSPAPER PRESCRIBING.

Newspaper prescribing obtains in many places, but some of the most shameless examples of it that we remember to have seen are to be found in the *Philadelphia Record*. In a recent issue of that journal this abuse is all the more flagrant in that it follows under the heading "Health and Hygiene," immediately after the official vital statistics, thereby acquiring in the minds of the thoughtless or less well-informed a fictitious authority. Prescriptions are published for twenty-eight applicants, on account of conditions which, so far as may be judged from the crude descriptions of the patients, range from simple "constipation" and "nervousness" to cardiac and other serious troubles. A noticeable feature is the fact that the writer recommends exceedingly potent drugs, which should never be used for self-doctoring or even be ordered by a physician for a patient who is not under his immediate observation; for instance, salts of strychnin are recommended in no less than eleven cases. Fancy ordering a hundred 1/40 grain tablets of strychnin sulphate to be put into the hands of

a patient, and that, judging from the composition of his letter, a patient of no extraordinary degree of intelligence or education. Strophanthus, again, is another drug that should not be prescribed except when its effects can be under the observation of the physician. We say nothing of certain proprietary remedies, which appear to have a great place in the prescriber's therapeutic armamentarium. The thing that strikes us most in this connection is the fact that these prescriptions, written for individual cases, must be the work of either a licensed practitioner or a layman. In the latter event, is it not an infraction of the medical law to prescribe for payment for individual patients—for it is to be presumed that the writer in this column is not doing newspaper work for nothing? In the former event, is not a physician who publishes broadcast a prescription presumably intended for the relief of one individual, so that numerous other persons may use it, fancying their own symptoms to resemble those described by the newspaper patient, guilty of unprofessional conduct in a grave degree —the more grave because of the danger inherent in the use of drugs such as those named above? This consideration alone, to say nothing of a most vicious form of contract practice, such as would be involved in a licensed practitioner's prescribing publicly for pay for patients whom he had never seen, surely calls for a protest from the readers of this Philadelphia newspaper.

CONSUMPTION AND BREACH OF PROMISE.

In view of the dangers of the puerperal condition, for example, and the probably real though not so generally admitted dangers of heredity, it is easy to see that it is inadvisable for those suffering from developed tuberculosis to marry. A recent decision[1] of the Supreme Court of Washington goes rather farther than has usually been the case in making consumption a legal disability. It makes the breach of promise of marriage because of the disease in the woman justifiable, even if the engagement were entered into with knowledge of her condition. This may be considered good public policy, but it is certainly a hardship to the individual. In view of the fact that the condition was known before betrothal, the award of reasonable damages would seem to most persons as just in this case as in most breach of promise suits. A natural outcome of this decision should be the enactment of a law making wilful betrothal with a consumptive, with knowledge of his or her condition, a punishable offense. Considering, however, the fact that a very large proportion of the population is more or less infected with tuberculosis, and the possibility that we owe to this a certain immunity to the fatal forms of the disease, such a law might be difficult to enforce justly. In the meantime we are making the way of the consumptive, like that of the transgressor, hard.

A JUDGE ON PHYSICIANS' FEES.

A Missouri court has decided that a physician's fees can not legitimately be based to any degree on the patient's income. Besides being subversive of a custom of the profession that has prevailed at all times and in all places, the logical result of this decision would be to raise the standard of physicians' fees on ordinary commercial principles to the highest amount ordinarily obtainable, instead of the present custom of placing them at a medium between that and the lowest acceptable, which makes it possible for the physician to exercise a humane charity in the case of the less well-to-do without either pauperizing them or impoverishing himself. The physician's services, it seems, are to have a trade valuation like a loaf of bread or a pound of sugar, so that their value to the patient is in no sense dependent on the latter's economic importance. If that is so, then on what principle, we ask, is it possible to justify a difference in the degree of damages awarded to different persons for the loss of a limb or other disablement, or to their families in the event of their death, through misadventure for which others are held responsible. The law assumes that the economic value of life and limb differs for different people in relation to their earning capacity and other matters. Must not the value of the services rendered by a physician with a view of obviating these disastrous results also necessarily vary correspondingly?

1. Grover versus Zook, 87 Pacific Rep., 638.

GUSTATORY AUDITION.

A new variety of synesthesia, in which the subject experienced gustatory sensations on hearing sounds such as spoken words or certain non-vocal sounds, has recently been described by Pierce[1] and the case presents some interesting features. The sensations experienced by the young woman under observation included oral perception of temperature, texture and consistency as well as true gustatory perception, but did not include olfactory qualities, as she was anosmic. Pierce feels convinced that this phenomenon was a true synesthesia and not the result of a "lively dramatic fancy." The experience is said to come quite unsolicited, and the patient frequently has some difficulty in finding adequate equivalents to express the idea of the sensation experienced. The best condition for the appearance of the synesthesia seemed to be a state of natural hunger. The impression is distinct from the idea of the object to which it is compared and precedes the conception to the latter; on the other hand, similarity of sound did not necessarily determine similarity of oral sensation and the same gustatory sensation was associated with the most diverse sounds. The sensations are referred to definite locations in the mouth. "Thus the equivalents of *Ethel* and *hall* (tactual) are felt at the tip of the tongue; of *tox* (irritation) at the back of the throat; of *Judith* (salt) at the sides of the tongue," etc. The direction of the experience was always from sound to taste, the reverse being possible only as the connections were remembered. Tests over periods of many months invariably resulted in identical equivalents being elicited by like sounds. There is little evidence one way or the other as to whether or not this phenomenon is to be explained on purely physiologic grounds, depending on a cross circuiting of the association fibers between different brain centers. Pierce makes the interesting sugges-

1. American Jour. Psychology, July, 1907.

tion that the slowness of hearing to which the young woman was subject might be due to a deflection of the impulse from the auditory center to the region concerned in the sense impressions of the mouth. So far he has been unable to substantiate this by showing any consistent augmentation of the gustatory sensations with the periods of increased slowness of sound perception. However, there is nothing in the case to refute the so-called "psychologic theory" of such phenomena, which regards them as due to persistent association.

Medical News

CALIFORNIA.

Cleanse County Hospital.—The San Francisco Board of Health has decided thoroughly to cleanse and disinfect the City and County Hospital, and to wage a war of extermination on the fleas and rats in the institution. The buildings will then be thoroughly cleansed and disinfected.

Plague Situation.—From August 12 to 29, inclusive, nine cases of plague have been reported in San Francisco, with six deaths. Two of the patients were sailors from coasting vessels, while the other cases occurred in hospitals and other parts of the city. No new cases have since developed.

Hospital Notes.—The new Siskiyou County Hospital at Yreka is to be erected immediately at a cost of $19,550 for the building alone. The structure will be two stories high and will contain 24 rooms.——Dr. Herbert P. Barton has been granted a permit for the Clara Barton Hospital in Los Angeles.

Vital Statistics for July.—During July there were reported 2,190 births and 2,540 deaths, equivalent to an annual rate per 1,000 of 12.09 births and 14.09 deaths. Of the deaths reported, 380, or 15 per cent., were from diseases of the circulatory system, and 367, or 14.5 per cent., from tuberculosis. There were 240 deaths from diseases of the nervous system, and 184 from disease of the respiratory system. Deaths from epidemic diseases were as follows: Typhoid fever, 54; diphtheria, 34; whooping-cough, 22; measles, 17; influenza, 8, and scarlet fever, 7.

Personal.—Dr. John A. Randolph, Willows, has been appointed health officer of Glenn County, vice Dr. William Thurston, resigned.——Dr. Edwin H. Wiley, Los Angeles, has been appointed assistant police surgeon.——Dr. R. G. Broderick has been appointed warden of the San Francisco City and County Hospital, vice Dr. John V. Hughes.——Dr. J. DeBarth Shorb, Los Angeles, is reported to be seriously ill at the Adler Hospital, San Francisco.——Dr. W. Harriman Jones has been made chairman of the Long Beach Pure Food Commission, and Drs. Albert C. Sellery and Joseph M. Holden have been reappointed members of the commission.

ILLINOIS.

Personal.—Dr. Ernest B. M. Mammen and family, Bloomington, are visiting in London.——Dr. Ora D. Holland and family, Streator, sail for Europe September 11.——Dr. Walter G. Bain, Champaign, state bacteriologist for the water survey department, has resigned and will move, with his family, to California.

Injured.—Dr. Charles V. Moorhouse, Marietta, recently suffered severe injury by a kick of a horse.——Dr. Edward W. Fiegenbaum, Edwardsville, was seriously injured in the left leg in a fall, August 20.——Dr. C. E. Betz, St. Joseph, was operated on for pleurisy with effusion, at Burnham Hospital, Champaign, August 15.

Anti-Vaccination in Aurora.—At a meeting of women in Aurora, August 28, in opposition to the order for compulsory vaccination of children before entering school, Dr. Heman Spalding, Chicago, made a strong argument in favor of vaccination which was ill received by the assembly. As a result of the meeting a committee was appointed to draw up resolutions instructing the city council to order the president of the board of health to rescind his order of compulsory vaccination.

Chicago.

Ophthalmologists to Meet.—The first meeting of the Chicago Ophthalmological Society will be held October 14.

Isolation Hospital.—The health commissioner, it is reported, desires to transform the Isolation Hospital into a hospital where diphtheria, scarlet fever and other contagious diseases may be treated, and to build a new hospital for smallpox at a cost of $25,000, to accommodate 240 patients.

Commencement.—At the annual commencement exercises of the Illinois Medical College, held August 29, a class of nine was graduated. The doctorate address was delivered by Bishop Fallows, who quoted on "Relation of Religious and Medical Science," and the degrees were conferred by Dr. Heman H. Brown, president of the college.

Undertaker's License Revoked.—The health commissioner took drastic measures on August 8 in his endeavor to prevent the spreading of contagious diseases of children, when he revoked the license of C. Bacigalupo, an undertaker, for violation of the burial ordinance in officiating at the public funeral of a child who had died from measles in a public institution.

Early Diagnosis of Tuberculosis.—The Health Department advises that for early diagnosis of tuberculosis, tuberculin will be furnished free to physicians who ask for it, and the department will make the diagnosis. During August, 175 cases of tuberculosis were reported, showing that more physicians are reporting tuberculosis than before, not that the disease is increasing.

Bequests for Charity.—By the will of Henry L. Barney, who died recently, the following bequests were made: Visiting Nurses' Association, $20,000; Chicago Lying-in Hospital, $10,000; Hospital for Destitute and Crippled Children, $5,000; Chicago Home for Incurables, $5,000; Chicago Daily News Fresh Air Fund, $10,000, and Chicago Tuberculosis Institute, $10,000.

Medical Library Transferred.—The medical department of the John Crerar Library has been moved from the Newberry Library and installed in its new quarters. Gen. Alfred C. Girard, the librarian, announces that the reference library is open as usual to practitioners. The collection now consists of about 41,000 volumes, and 389 medical periodicals are regularly received. The new location of the library is on the sixth floor of the Marshall Field building, adjoining the reading room.

Personal.—Dr. Edward V. L. Brown leaves for Europe this month, to be gone seven months.——Dr. Haim I. Davis, superintendent of the Detention Hospital, is visiting eastern cities to inspect the methods employed in the care of insane in incipient stages.——Dr. and Mrs. Filip Kreissl have returned from Europe.——Dr. Stanley Thomas has been appointed assistant at the Minnesota State Hospital for Insane, St. Peter.——Dr. Margaret R. Riley has passed the civil service examination for school medical inspector.

Deaths of the Week.—During the week ended August 31, 616 deaths occurred, equivalent to an annual death rate per 1,000 of 15.24. During the previous week the deaths numbered 684, and the death rate per 1,000 was 16.92, and during the corresponding week of 1906 the d aths were 561, with a death rate of 14.26 per 1,000. Acute intestinal diseases caused 170 deaths; violence (including suicide), 51; pneumonia, 53; consumption, 3[illegible] heart disease, 37; nephritis, 36; cancer, 31; typhoid fever, 13; scarlet fever, 10; diphtheria, 6, and measles and whooping cough, each 5.

MARYLAND.

Baltimore.

College Purchases Laboratory Site.—The Baltimore Medical College has purchased a lot 64 by 167 feet with building, at a cost of $30,000. A building for laboratory purposes will be erected on the site.

Deaths of the Week.—During the week ended August 31, there were 214 deaths in Baltimore, an unusually large number as compared with previous years. This mortality is equivalent to an annual death rate of 18.22 per 1,000.

Meeting of State Society.—The Medical and Chirurgical Faculty of Maryland will visit the Jamestown Exposition September 11 and 12. Meetings will be held on the boat on both evenings. At Norfolk, the faculty will be welcomed by a committee from the Norfolk Society.

Personals.—Dr. J. W. Hawkins has recovered from his recent attack of ptomain poisoning.——Dr. Edgar M. Parlett of the B. & O. Relief Department is taking antitoxin treatment for tetanus at the Maryland General Hospital.——Dr. Llewellys F. Barker returned from Europe August 28.——Dr. W. T. G. Whiteford, Parkville, was operated on for appendicitis at the Baltimore City Hospital, August 27.——Dr. John A. Luetscher is reported to be ill.

MICHIGAN.

New Hospital.—The old office of the Michigamme mine is being remodeled as a hospital for Dr. Leon L. Goodnow, in charge of the work at the Ohio, Imperial and American mines. The building is to be provided with three wards, operating room, etc.

State Sanatorium.—The State Sanatorium for Tuberculosis, Howell, was formally opened August 19 with 7 patients. The board has accepted the building now on the ground and arrangements are being completed for the immediate erection of an additional building.

Personal.—The residence and office of Dr. Arthur F. Fischer, Hubbell, were destroyed in the fire which ravaged the village, August 17. Dr. Fischer's loss is estimated at $25,000, about one-third of which is covered by insurance.——Dr. Victor C. Vaughan, Ann Arbor, left for Vienna August 27, to attend the International Congress on Tuberculosis, which opens in that City, September 16.——Dr. Albert P. Ohlmacher has resigned his position in the biologic laboratory of Frederick Stearns & Co., and has resumed private practice in Detroit.

July Mortality.—During July, 2,591 deaths were reported to the department of state, equivalent to an annual mortality of 11.7 per 1,000 of population. In July, 1906, the rate was 12.7 per 1,000. Of the deaths 507 were of infants under one year of age; 625 of children under 4 years of age, and 664 of individuals 65 years of age and over. Among the important causes of death were: Violence, 260; tuberculosis, 227; diarrhea, 147; cancer, 123; pneumonia, 70; meningitis and typhoid fever, each 37; whooping-cough, 18; diphtheria, 15; measles, 10; scarlet fever, 8; tetanus, 7, and influenza, 4.

NEW YORK.

Otisville Sanitarium.—The first municipal sanitarium for the tuberculous now accommodates 90 patients. This institution was opened in June, 1906, at Otisville, Orange County. Light work and nine and a half hours a day rest in bed is required of each patient.

Typhoid Fever.—Typhoid fever is reported to be very prevalent on the north shore of Staten Island. At least 25 persons are being treated at the S. R. Smith Infirmary, Tompkinsville, and at St. Vincent's Hospital, West Brighton. An expert from the New York board of health, who examined the water supply, reports that it is polluted.

Hospital Fire.—At a fire which broke out in the sterilizing room of Thrall Hospital, Middletown, a young orderly was severely burned in his effort to extinguish the fire. Dr. Lillian Morgan, an interne at the institution, also assisted in fighting the fire and rescued the orderly. A few patients were overcome by smoke, but received no serious injury.

Crusade Against Unclean Restaurants.—The health commissioner of Buffalo has been making an inspection of restaurants in the city and found in many cases kitchens unclean and insanitary; ice boxes filthy, and meat tainted. A similar crusade was made a few weeks ago against certain Greek candy stores in the city, which has been followed by excellent results.

Personal.—Dr. John V. Sheppy, Albany, who was convalescent after a compound fracture of the leg, made a misstep August 15, and fractured the leg a second time.——Dr. Otto Pfaff, Oneida, has been appointed resident surgeon for the Oneida Railway Company.——Dr. T. Floyd Woodworth has been reappointed health officer of the Board of Health of the village of Kinderhook.

Use of Unclean Receptacles.—An act to amend the agricultural law relative to prohibiting the use of unclean or insanitary cans or receptacles for the transportation or sale of milk products became effective July 18. During the maneuvers of the Fourth Brigade, N. G., N. Y., at Farnham, the state inspector destroyed several cans of milk intended for the consumption of the guardsmen, because the milk contained was found to be unclean.

Illegal Practitioner Prosecuted.—The Erie County Medical Society is attempting to secure evidence against J. A. Hughson, Buffalo, to convict him of fraud. It is claimed that an electrical engineer was led by this individual to believe that he was in urgent need of medical attendance which would cost him $1,000 and, as he did not have the money, he gave $200 in cash and a note for the balance. He soon discovered that he was receiving no benefit from the treatment, and after consulting with physicians, was convinced that he had no serious ailment. He was willing to lose the cash payment that he had made, but objected to an attempt to enforce payment on the note for $800. In another similar case this individual is said to have returned $600 to the victim.

New York City.

Typhoid Fever.—In Richmond typhoid fever is said now to be under control, as only 10 cases were reported last week. The results of the water analysis have not yet been made public. The disease seems to be confined to the north shore, which is supplied with water from driven wells.

Death Rate.—The mortality for the week ended August 24 was at the rate of 19.48 per 1,000 per annum, against 17.52 for the same week last year. The total number of deaths in the five boroughs was 1,600, as compared with 1,395 in the corresponding week in 1906. During the week 394 children under 5 years died, as compared with 293 in the corresponding week of 1906. Of children over 5, 422 died, as against 318 of last year.

Contagious Diseases.—There were reported to the sanitary bureau for the week ended August 24, 353 cases of tuberculosis, with 149 deaths; 196 cases of diphtheria, with 22 deaths; 170 cases of measles, with 14 deaths; 98 cases of scarlet fever, with 2 deaths; 153 cases of typhoid fever, with 17 deaths; 16 cases of whooping-cough, with 14 deaths; 10 cases of cerebrospinal meningitis, with 9 deaths; 7 cases of varicella, a total of 1,003 cases and 227 deaths.

Croton Water Inspection.—The Croton reservoir was inspected by Commissioner of Health Darlington to determine whether, from a sanitary point of view, it would be safe to deplete other storage places into the Croton reservoir. This reservoir has a capacity of 27,000,000,000 gallons of water, and will soon be filled to the brim. There is no danger of a water famine. The filling of the Croton reservoir has two objects in view, the first to cover the flats and thus prevent accumulation of the germs, and second, to dilute the water so that the germs occasioned by the drought would not have the power for evil.

OHIO.

Tuberculosis Dispensary.—The antituberculosis dispensary of the Health Department of Cincinnati was recently opened at 508 W Ninth Street. The dispensary is in charge of Dr. Clayton B. Conwell and two trained nurses.

School Children Physically Unfit.—It is alleged that 50 per cent. of the school children of Ohio are physically defective. One of every two is said to be a sufferer from disorder of vision, bad teeth, throat affections or other ailments.

Illegal Practitioner Fined.—Edward Pfeiffer, Columbus, charged with practicing medicine without first having secured a license or diploma, is said to have been fined $150 and costs at Lancaster, August 24. He is said to have paid the fine and costs and left town.

Medical Inspection.—The systematic medical inspection of the pupils of public schools of Dayton will be inaugurated under the direction of the Montgomery County Medical Society. The work will be done by a corps of 24 physicians, who will make one visit a week to each school, and more if required.

Personal.—Dr. Darlington J. Snyder, Columbus, has resigned as member of the County Board of School Examiners.——Dr. Frank Winders, Columbus, who has been ill, is reported to be convalescent.——Dr. John J. Beekman, Columbus, suffered severe contusions by being run down by an automobile August 24.

State Society Meeting.—At the annual meeting of the Ohio State Medical Society held at Cedar Point, August 28 and 29, a set of resolutions was adopted denouncing Senators Foraker and Dick and ex-Congressman J. H. Southard for their alleged participation in efforts to defeat pure-food legislation during the last session of Congress. The following officers were elected: President, Dr. Charles Bonifield, Cincinnati; vice-presidents, Dr. David W. Steiner, Lima, James S. McClellan, Bellaire, Dell S. Bowman, Akron, and Henry T. Sutton Zanesville; secretary, Dr. John H. J. Upham, Columbus; treasurer, Dr. James A. Duncan, Toledo; councilor for the Fourth District, Dr. Julius H. Jacobson, Toledo; councilor for the Ninth District, Dr. John E. Sylvester, Wellston; member national legislative committee, Dr. Benjamin R. McClellan, Xenia; delegates to the American Medical Association, Drs. Hugh F. Lorimer, Chillicothe, Rufus B. Hall, Cincinnati, and Charles Graefe, Sandusky, for one year; Drs. Horace Bonner, Dayton, Roland E. Skeel, Cleveland, and William D. Dueschle, Columbus, for two years, and alternates for one year, Dr. Fred W. Lane, Cambridge; Benjamin H. A. M. Blair, Lebanon, and John A. Dickson, Ashtabula, and for two years, Drs. Charles N. Smith, Toledo; A. Melville Crane, Marion, and Hugh A. Hart, Wooster. The society adjourned to meet in Columbus in 1908.

PENNSYLVANIA.

Sanatorium Site Purchased.—Dr. Samuel G. Dixon, Commissioner of Health of Pennsylvania, has purchased the Mountainside Sanatorium, with 57 acres of land adjoining, at Mont Alto Park, from Dr. Joseph T. Rothrock, Westchester, formerly state forestry commissioner. The sanatorium will be made part of the State Camp for the Treatment of Tuberculosis.

Personal.—Dr. Isaac C. Gable, York, has resigned as inspector of York County.——Dr. Milton K. Neiffer, Wyncote, has been made health officer of Cheltenham, and Dr. Harry D. Johnson, Cheltenham, and A. T. Clayton, Ogontz, members of the board. ——Dr. Allen Keller, Telford, was recently thrown from his carriage and fractured his leg.——Dr. E. Ziegler Bowen, North Scranton, sustained a compound fracture of the left leg while trying to catch a horse in his pasture recently.

Homes for Insane.—At a meeting of the committee of lunacy of the State Board of Charities, August 29, plans were approved for two new buildings to be added to the State Insane Hospital at Harrisburg, to accommodate 140 patients and to cost $150,000. The committee reports that there is great need for additional buildings for the state's insane, and at the present time there are about 13,000 patients in state and private hospitals and under county care. This number has been increasing at the rate of 200 patients a year, and despite this fact no new hospitals have been erected for ten years.

Philadelphia.

July Vital Statistics.—The report of the division of vital statistics of the bureau of health for July shows that 2,608 deaths and 2,903 births were reported.

Free Treatment for Consumptives.—The order sent out in May that all patients at White Haven Sanatorium for Poor Consumptives would be required to pay $7 per week for their maintenance, has been reconsidered and the doors of the institution are now thrown open to any one unable to pay for treatment.

Hospital Report.—The report of the German Hospital from July 25 to August 22 shows that 3,459 patients were treated in the various dispensaries of the institution. Departments visited were as follows: Medical, 326; gynecologic, 142; surgical, 2,352; eye, 294; ear, 153, and throat and nose, 92. During the same period 1,206 prescriptions were issued.

Cocain Sellers.—Nicholas Larkins, a youth of Philadelphia, is said to have been sentenced to the House of Correction for a year, for selling cocain and other narcotic drugs without a license.——John Grimshaw, charged with selling cocain to boys, was held for trial in $800 bonds, August 24. Three boys confessed to the magistrate that they had become victims of the cocain habit, and said that Grimshaw had showed them how to inhale cocain.

Personal.—Dr. Harold D. Senior of the Wistar Institute of Anatomy has been appointed professor of anatomy in the College of Medicine of Syracuse (N. Y.) University, vice Dr. George M. Price, resigned.——Dr. M. J. Horan, an ambulance surgeon at the Medico-Chirurgical Hospital, was injured in a collision with an ambulance and street car, August 29.——Dr. A. Alonzo Sargent has been elected supreme medical examiner of the Foresters of America.

Health Report.—The total number of deaths reported for the week ended August 31 was 434, as compared with 489 in the preceding week and 407 in the corresponding week of last year. The principal causes of death were: Typhoid fever, 7; pertussis, 9; consumption, 53; cancer, 23; apoplexy, 17; heart disease, 33; acute respiratory disease, 33; enteritis, 68; appendicitis, 10; Bright's disease, 25; congenital debility, 11; suicide, 5; accidents, 14, and marasmus, 13. There were 156 new cases of contagious disease reported, with 11 deaths, as compared with 190 cases and 26 deaths reported in the preceding week.

SOUTH DAKOTA.

Sanatorium Inspected.—The National Sanatorium for Veteran Soldiers, Battle Mountain, Fall River County, was formally inspected by Captain Palmer, superintendent, August 19.

Personal.—Dr. Charles M. Hollister has been appointed physician at the Indian School, Pierre, vice Dr. DeLorme W. Robinson, resigned.——Dr. Rudolph D. Jennings, governor and surgeon of Battle Mountain Sanatorium, has resigned, to take effect September 1, and will enter private practice at Rapid City.

District Society Meeting.—The Fourth District Medical Society of South Dakota will hold a meeting September 11 at Huron, under the presidency of Dr. Oscar R. Wright of that city. The secretary announces that every physician in South Dakota has been invited. A large attendance is expected, as the meeting occurs at the same time as the state fair.

TENNESSEE.

Physicians' Building.—It is reported that a building is to be erected in Nashville, at Eighth Avenue near Church Street, to be used for physicians exclusively.

Removes Diphtheria Sign.—A fine of $25 is said to have been imposed on Mr. E. B. LeMaster, Memphis, August 14, on the charge of violating the health ordinance by wilfully and maliciously tearing down a diphtheria sign from his residence.

Communicable Diseases.—Scarlet fever is reported to be present to a serious extent in Gallatin and Rogana. The health authorities are maintaining a strict quarantine and hope to check a further spread of the disease.——Diphtheria is reported to be spreading in the Holly Creek section of Wayne County. Two public schools have been closed, and three deaths have occurred.

Personal.—Dr. George F. St. John, Petros, has been reappointed physician of the state prison mines, Brushy Mountain. ——Dr. Henry F. Alexander, Elizabethton, has succeeded Dr. Edward T. West as chief surgeon of the Mountain branch of the Soldiers' Home.——Dr. Paul F. Eve, Nashville, is taking a trip to the Atlantic Coast.——Dr. William R. Maney, Nashville, is reported to be ill with fever.

Anti-Tuberculosis Posters.—Dr. James A. Albright, secretary of the State Board of Health, has supplied the various railroad companies in the state with copies of the anti-tuberulosis law which must be posted in every passenger coach. The railroads have been granted the privilege of combining the posters issued by the state boards of Kentucky and Tennessee, as most of the roads passing through Tennessee run also through Kentucky.

TEXAS.

Sanitarium Incorporated.—The Baptist Sanitarium of Houston has been incorporated to erect, equip, conduct and maintain a hospital for purely benevolent, charitable and educational purposes.

Excursion Rates Annulled.—The railroads of Texas have indicated that they will obey the ultimatum of the state health officer, issued on account of the prevalence of dengue in Mexico, and have taken off all excursion rates between the United States and Mexico.

Free Transportation for Nurses.—In answer to an inquiry from the railroad commissioner, the attorney general holds that when a wreck occurs on a railroad, and physicians employ persons to attend the injured, such employés shall be entitled to free transportation to the hospital or place where the injured persons are taken, but are not entitled to free transportation for the return trip.

Personal.—Dr. John E. Reeves has resigned as a member of the board of health of Orange.——Dr. Henry K. Leake has been appointed chairman of the board of health of Dallas, vice Dr. Jesse M. Pace, resigned.——Dr. Edward L. Seay has been elected chairman; Dr. William T. Booth, vice president and treasurer, and Dr. Joseph A. Mayes, secretary, of the Denison board of health.——Dr. Adoniram J. Gibbs has been appointed city physician of Denison.——Dr. J. H. N. Huggins, Georgetown, has been appointed health commissioner of Williamson County to fill out the unexpired term of Dr. Edward M. Thomas, Georgetown, resigned.——Dr. John A. McIntosh, assistant superintendent of the State Insane Hospital, San Antonio, has resigned, to become resident physician at the Moody Sanitarium.——Dr. and Mrs. Louis E. Magenat, Amarillo, have returned from New York.

New Medical Board Meets.—At the first meeting of the Board of Medical Examiners for the State of Texas the following committees were appointed:

Rules and Regulations—Thomas J. Crowe, James D. Osborne and Radford O. Braswell.

On Institutions to Make a Study of the Various Medical Colleges —William C. Collins, J. P. Rice, John D. Mitchell, Radford O. Braswell and Ira W. Collins.

Reciprocity—Garland B. Foscue, Edwin P. Becton and J. P. Rice.

To Draft Certificates to be Used—Edwin P. Becton, John D Mitchell and Radford O. Braswell.

The different branches for examinations were distributed as follows: John J. Dial, pathology and histology; James D. Osborne, medical jurisprudence; Thomas J. Crowe, chemistry; John D. Mitchell, obstetrics; Garland B. Foscue, physical diagnosis; William B. Collins, anatomy; J. P. Rice, bacteriology; Edwin P. Becton, surgery; Radford O. Braswell, gynecology; Ira W. Collins, hygiene; Marquis E. Daniel, physiology.

GENERAL.

American Microscopical Society.—At the twenty-seventh annual meeting of the American Microscopical Society held in Boston August 20-22, the following officers were elected: President, Prof. Herbert Osborne, Ohio State University, Columbus; vice-president, Dr. Arthur E. Hertzler, Kansas City, Mo.; secretary, Dr. Fred C. Zapffe, Chicago, and treasurer, Mr. David L. Zook, Chicago. The next meeting will be held either in Cincinnati or in Rochester, N. Y.

Yellow Fever in Cuba.—A telegram regarding yellow fever in Cuba from Governor Magoon on August 23 showed that there were no new cases, either in the camp or in the city of Cienfuegos. A second report later in the day mentions one confirmed and one suspicious case in the city, and states that 381 men are at work. On August 26 the governor telegraphed that Major Kean had returned from Cienfuegos and reported the situation well in hand, although he believes the disease will probably reappear at rare intervals during the next six weeks, but will be eradicated by that time. He says that there is no danger of an epidemic, that all soldiers are cured and discharged from the hospital, excepting one who is convalescent. There are ten cases, all in Cienfuegos, and with the exception of that city, no cases are known to exist in the island.

The Sanitary Situation in Cuba.—The following is from an occasional correspondent who is in a position to know the actual conditions that obtain in Cuba:

An unexpected outbreak of yellow fever among our soldiers at Cienfuegos has called attention to the fact that there still persist several foci of that disease in Cuba, and to the necessity of continued strict vigilance on the part of our medical officers to protect the army of occupation. But "it is an ill wind that blows nobody good," for this outbreak has at last convinced the provisional government of the inefficiency of provincial and municipal authorities in sanitary matters and of determining Governor Magoon to sign the decree—long since under contemplation—centralizing the sanitary service.

The military command stationed at Cienfuegos, unable to secure a hospital for its own independent use, rented half of a private hospital belonging to a Dr. Landa, with the understanding that no patients suffering from infectious diseases were to be admitted. The ward occupied by the soldiers was screened, but apparently not effectually. There was no screening on the Cuban side, nor were the quarters of the hospital corps men, outside the hospital, protected against mosquitoes. It is admitted that yellow fever had existed for some time in Cienfuegos and that the municipal authorities and board of health knew nothing of it. At the first rumor of a suspicious fever in the garrison, Dr. Agramonte, a Cuban expert, colleague of Major Walter Reed on the board which demonstrated the mode of propagation of this disease, was sent down from Havana to investigate. He found eight clear cases of yellow fever at the hospital, all hospital corps men except one, a member of the band, patients in the screened ward. Two other soldier patients in this ward subsequently developed the disease, showing that the screening had been ineffective. In the first known case the patient was taken sick August 4, eight days after his arrival from Havana; the others followed closely on this. All these classes Dr. Agramonte declared to be secondary to one or more previous unrecognized cases, from which must have originated the infection on the Cuban side of the hospital, as well as the hospital corps men's quarters, about the middle of July. The board of health at first denied the occurrence of yellow fever in town, previous to the outbreak at the hospital, but on more careful investigation had to admit their oversight; thus the presence, on July 16, of four cases, all in Spaniards, was established. It seems most probable that scattered cases had existed in Cienfuegos for several months, about which the local authorities were entirely ignorant. By August 19 a total of 12 cases had occurred among our soldiers, namely, 9 hospital corps men and 3 cavalry men, all at the hospital. On that date three had died while others were convalescing. This, it is believed, will be the end of the outbreak. It is needless to say that, as soon as the disease was diagnosed, our men were all removed from the infected hospital and the most stringent measures taken to prevent further infection. The garrison itself, some 200 men strong, is quartered at some distance from the hospital and not in any danger.

It is interesting and gratifying to reflect, in this connection, that only six years ago had our troops been placed under similar circumstances, they would have been promptly removed from the purlieus of the town to some desert brush-covered plain, leaving most of their baggage behind to be burned or disinfected, and being otherwise subjected to unnecessary discomfort and hardships. Now they remain quietly and fearlessly in their quarters, practically as safe as though they were in the country.

In order to appreciate the significance of this outbreak and fix the responsibility therefor, we must bear in mind that when the Cuban republic came to an end, whatever else was changed the sanitary service was left, as it had been, in the hands of provincial and municipal authorities. It is true that there is a superior board of health in Havana with some sort of jurisdiction over the whole island; but this jurisdiction, outside of Havana, is mostly of an advisory character and barren of practical results.

As is well known, yellow fever was prevalent in the city of Havana last summer and fall, while a number of scattering cases were reported from the southeastern part of the province of Havana and from the provinces of Matanzas and Santa Clara. The sanitary situation was becoming serious. Soon after his arrival in Havana, in September, 1906, Mr. Taft, realizing the imminence of the danger, called Major J. R. Kean of the medical department of the Army, to his aid, as sanitary adviser, and gave him full powers. Major Kean had made an excellent record in Cuba during our first occupation, as sanitarian and administrator, and was the man for the emergency. The result of his activity was soon apparent. Before the end of December yellow fever had been stamped out of Havana. Unfortunately, Governor Magoon, in his desire to conciliate the dominant political party and not to interfere with provincial governments, stayed the hands of the sanitary adviser and prevented the extension of the good work beyond the capital. Whenever foci of infection were reported from the interior, with which local authorities were unable to cope, the governor would give special authority for the application of special measures and the expenditure of necessary funds, but no general systematic policy was instituted and carried out. The responsibilty for the Cienfuegos outbreak, therefore, can not be placed on the sanitary adviser or the superior board of health; they had nothing to do with the sanitation of that town, certainly no means of controlling it. It should be noted, in passing, that Governor Magoon has accepted the mosquito doctrine of the conveyance of yellow fever somewhat reluctantly, and that, as stated in his telegram to Secretary Taft, he still believes in the agency of dirt in producing or conveying this disease. It is regrettable that in such matters, so conclusively proved, he should not have entire faith in medical experts.

As was mentioned above, Havana has been entirely free from yellow fever since last January. It was also believed that the infection had been stamped out in the provinces last fall and winter. But the reappearance of cases at various points this summer, notably Cienfuegos, without apparent reintroduction of infection from outside, shows that the work of extermination of infected stegomyia mosquitoes had been imperfectly done and that there must have occurred a succession of mild unrecognized cases about those places until the present time. This means that many of the local boards of health, or sanitary officers, have been ignorant, indifferent and inefficient, neither reporting cases of infectious diseases nor taking measures to prevent their propagation. It is true that those actuated by a desire to do their duty were soon discouraged by the insurmountable difficulties which lack of funds, politics and favoritism placed in the way. Even the recommendations of the superior board of health were generally treated with silent contempt. It is surprising that, under such conditions, yellow fever should not have spread more extensively and made more victims. For, as has already been explained,[1] the problem of dealing with this disease, now, is quite different from what it was during our first occupation of the island, immediately after the Spanish War.

Under such general conditions there was but one remedy, one solution. We know now how vain and futile it would be to expect provincial and municipal authorities to protect themselves and others by taking the necessary steps to stamp out infectious diseases. They know little about it and care less. In fact, it is suspected that some would rather have the threat of yellow fever hang over the heads of foreigners, especially Americans, so as to keep them out of the island and not disturb conditions which are so profitable to native politicians. Therefore, the governor has wisely decided, after long consideration and in spite of active opposition from provincial bosses, to nationalize the sanitary service and give the superior board of health supreme authority over this service in all parts of the island. But it is not enough to issue an edict; its execution should be entrusted to an efficient personnel; the best men in each town must be selected as sanitary officers and in-

1. THE JOURNAL A. M. A., June 22, 1907, 2119.

spectors, and here the governor may again expect stout opposition on the part of the dominant political party. But let us hope that he will be swayed by no other consideration than that of insuring to the island a clean and efficient sanitary service.

On the whole, the sanitary outlook is very encouraging in Cuba; there is every reason to believe that, before the end of the year, yellow fever will have been again extirpated from the island and that, under the new law, administered by an efficient sanitary adviser, Cuba will soon be, as it can easily be, one of the healthiest countries in the world.

CANADA.

Infant Mortality in Montreal.—The death rate among infants in Montreal per week, though showing some slight falling off, is still large, 141 having died during the week ended August 24. During that week 95 boys and 77 girls were born in Montreal.

Inspection of Schools in Montreal.—Montreal is again taking up the medical inspection of schools. Forty-five medical men will work till the end of December, at which time it is expected that the city council will appropriate further funds. As far as possible, those medical men who did the work last year will be chosen this year.

Personal.—Dr. H. S. Birkett, Montreal, has returned from several months abroad.——Dr. Harvey Clare, assistant at the Toronto Provincial Hospital for the Insane, has accepted an appointment as assistant superintendent of the New Westminster, B. C., Hospital for the Insane.——Dr. Neil McPhatter, president of the Canadian Club in New York, has been visiting in Vancouver, B. C.——Dr. James B. Goodall, Montreal, has gone abroad for two years' work in gynecology.——Dr. R. A. Reeve, Toronto, past president of the British Medical Association, was made a vice-president for life at the recent meeting at Exeter, England.

FOREIGN.

Honorary Degree for a Lay Investigator.—It is announced that an honorary medical degree has been conferred by the medical faculty at Heidelberg on Baron J. v. Uexküll for his important research on the processes of stimulation in nerves and muscles.

French Congress of Surgery.—The twentieth French Surgical Congress, which will convene at Paris October 7, is to discuss the influence of the Roentgen rays on malignant tumors; transplantation of nerves, muscles and tendons in treatment of paralysis, and tuberculosis and cancer in connection with accidents.

Union of Three French Medical Societies.—Three medical societies of Paris, founded, respectively, in 1796, 1805 and 1808, have recently consolidated, continuing the name of the oldest, the *Société de Médecine*. The union was celebrated by a banquet, at which Dr. Coudray presided and Professor Cornil, the oldest medical journalist present, reviewed the history of the three organizations and outlined the future policy.

Reduction of Malaria Mortality in Italy.—The mortality from malaria has fallen from over 15,000 to 4,700 during the last few years, thanks to the systematic campaign of protection against mosquitoes and the government monopoly and sale of pure quinin at or below cost wherever there is a post-office. The populace is learning to appreciate the benefits of quinin more and more, over 45,000 pounds having been sold in 1906.

Growth of the German Leipziger Verband.—The last annual meeting showed a register of 19,828 members on the books of this association, founded to promote the material interests of the profession in Germany. This is an increase of 1,105 during the last year. About 54,323 letters have been received and 141,865 written, while 4,056 applications for positions were received and 3,374 supplied. The number of medical students in Germany has increased from 6,080 last year to 7,219, and young men were urgently warned to choose some other career rather than the overcrowded medical profession. With regard to contract practice in Germany, an armed peace prevails.

Regulations to Prevent Transmission of Disease in Schools.—The German authorities have issued directions to prevent school epidemics. Chicken pox and ringround are included in the list of 24 diseases which compel precautionary measures. If a case of diphtheria, epidemic cerebrospinal meningitis or scarlet fever has been discovered in a school, all persons who have come in contact with the patient are advised to rinse nose and throat daily with some disinfectant fluid, and, in case of diphtheria, to have a preventive injection of antitoxin. The school rooms must be swept daily and wiped with moist cloths at least twice a week, and it is advised to have the drinking water examined for bacteria at regular intervals. It is urged that the children and their parents should be instructed in the means to prevent and manage transmissible diseases. The full text of the regulations is given in the *Deutsche med. Wochschr.*, August 15.

Endowments for Hospitals and Research.—Prince Ferdinand of Bulgaria has given $800,000 for the construction of a sanatorium for consumptives. An architect in Charlottenburg has bequeathed $100,000 for the construction of a hospital at Halle. Dr. Milschewski has given $15,000 to the university at Greifswald to endow stipends for needy students. Another sum of nearly $3,000 has also been raised by alumni to endow purses for travel for students needing change of air. About $300 has been given to Dr. L. Michaelis of Berlin to aid in his research on the action of ferments. Dr. W. Spielmeyer of Freiburg has also received nearly $400 to further his comparative research on trypanosomiasis and sleeping sickness, on one hand, and syphilis-paralysis and tabes on the other. L. Krehl of Heidelberg has also been granted $600 to aid his study of the elimination of water by lungs and skin at high altitudes. These sums have been awarded from various endowments for scientific research in Germany.

Medicolegal Experts in Paris.—Some time ago the French established a special course of instruction to prepare physicians to serve as medicolegal experts. A class of fourteen has been graduated and received their diplomas, and a recent notice from the president of the civil courts bids the justices of the peace—*juges de paix*—at Paris to select their experts from this list. J. Noir protests bitterly against this discrimination in an editorial in the last *Progrès Méd.*, stating that it is detrimental to the interests of justice and to the 450 physicians who have previously been called on for expert service in these courts. He states that specialist expert testimony is required, an ophthalmologist for questions involving the eye, a neurologist or psychiatrist in nervous and mental affections, and so on. No one human brain can have specialist knowledge in all branches of medicine. He deplores "the cultivation by the medical faculty of a parasitic flora of certificates and diplomas sapping the vitality of the ancient trunk of the old-fashioned medical course still offered by the French medical schools."

LONDON LETTER.

(From Our Regular Correspondent.)

LONDON, Aug. 22, 1907.

Railway Accidents in Great Britain in 1906.

There were far more serious railway accidents in Great Britain during 1906 than is generally the case. The British Board of Trade annual report on railway accidents just issued gives the number of passengers killed last year as 58, while the yearly average calculated over the past thirty years is only 22. However, even the fatality list in England for the last year need cause little alarm even to the most timid, as the number of passengers killed en route works out at only 1 in every 21,000,000. The above figures relate only to passengers killed in accidents to trains. Including casualties of every kind, 1,169 persons were killed and 7,212 injured in 1906.

The Congress on School Hygiene in London.

This congress has certainly brought out more clearly than ever the fact that England is behind most of the civilized countries of the world so far as the management and organization of schools are concerned. For instance, England is not only behind the European countries, but even Chili, Argentina and Servia have passed her in providing for the medical examination of school children. Another interesting point brought out at the congress is the incidence of pulmonary tuberculosis on school teachers. To assist in obviating this danger, so far as possible, the *Lancet*, August 17, suggests editorially that the due instruction of school teachers in the elements of hygiene must be insisted on, not only that they may teach the laws of health to the children, but also that they may practice on themselves. Dr. W. Oldright, professor of hygiene at the University of Toronto, read a paper on the "School Room as a Factor in the Production of Tuberculosis." Judging from statistics collected in Ontario, women teachers are especially susceptible to the disease, and the same facts have been noted in the United States. He stated that in some cases the mortality among women teachers from tuberculosis is as high as in the most dangerous trades, such as those of printers and stone cutters.

Therapeutics

[It is the purpose of this department to outline an up-to-date management of disease, to suggest scientific treatment for diseased conditions, and to present prescriptions that are simple, useful and palatable. Prescriptions are written in both the metric and apothecaries' systems, but the amounts of the ingredients are NOT exact translations of one system into the other, but quantities convenient for pharmacist and physician. It should be understood that solids are weighed in grams or fractions of grams, while liquids are measured in cubic centimeters; that a teaspoon holds five cubic centimeters, i. e., more than a fluid dram, hence a 100 cubic centimeter preparation will contain twenty doses.]

Treatment of Burns.

The time-honored classification of first, second and third degree burns, while of use perhaps in describing the condition of probable tissue destruction, is of far less value, even from a descriptive standpoint, than a classification which takes cognizance of the agent which caused the injury. One finds quite a different condition of things in a gunpowder burn than that present in a steam or hot-water burn, and while the treatment of the convalescent condition may be practically identical for all varieties of burns, the first procedures will differ considerably. But before these are considered pain and shock generally call for immediate treatment and usually should be attended to first.

The pain is best controlled by morphin hypodermatically; this drug also acts favorably when, as is commonly the case, the shock is largely psychic. However, there can not be extensive burns without considerable real shock.

First, give hypodermatically ¼ of a grain of morphin, if the patient is an adult, or proportionately smaller if not. Combine with this 1/100 of a grain of atropin if shock is present, but withhold it otherwise, as nothing should be given to aggravate the thirst which is, or shortly will be present.

Remove all clothing with a minimum of disturbance to the patient, cutting it free with shears rather than trying to take it off in the usual way. Next cover the entire body with blankets, leaving exposed only those parts which are injured and require dressings. Place hot-water bottles, hot-water bags or hot bricks outside of these and cover them up to prevent loss of heat. Replace them as often as they cool—dry heat is what is wanted, and plenty of it. If the pulse remains weak and rapid, give hypodermatically 1/30 of a grain of strychnin, followed by 1 c.c. (15 minims) of adrenalin chlorid solution (1 to 1,000) intramuscularly. If it seems necessary to use further stimulation, give hypodermatically a syringeful of a saturated solution of camphor in olive oil every hour, if needed, until such time as the strychnin may be repeated with safety, at which time the atropin may be repeated, if necessary. In any condition of shock these drugs should be administered hypodermatically, if they are required at all.

Systemic treatment having been attended to, the first measures taken to relieve the local injuries should always take into consideration the fact that all burns are primarily sterile and all treatment should be directed toward maintaining this condition. The only exception to this is when there is laceration by flying fragments, in burns accompanying explosions, and even here the wounds are generally aseptic by reason of the missile having been heated to the point of sterilization before it made its wound. The first rule, then, is to handle and treat all burns, whether small or large, superficial or deep, with surgical cleanliness.

If the burns are superficial, it making little or no difference what the cause, there is not much choice between a number of applications; the situation of the burn and immediate availability of the remedy generally governing the decision. The skin about the burn should be cleaned with soap and water, and the burn itself with sterile water or physiologic saline solution (made by dissolving a heaping teaspoonful of salt in a quart of boiled water). Remove carefully all foreign material and puncture all blebs at their lowest points. Express the serum, taking care that the raised cuticle is pressed back into close contact with the underlying tissue. Then apply any of the following treatments, though it may be noted that with various slight modfications picric acid has the greatest number of advocates.

Take strips of folded gauze, not less than six or eight layers, and better ten or twelve, dip them in the following solution, and, having them as wet as possible without dripping, cover up the entire burn. Retain with a gauze bandage snug enough to hold the dressing in place.

℞.	gm. or c.c.		
Acidi picrici	5	or	ʒi
Aquæ	500		Oi

M. Sig.: Use externally as directed.

Hare ("Practical Therapeutics") adds alcohol to the picric acid solution as:

℞.	gm. or c.c.		
Acidi picrici	5		gr. lxxv
Alcoholis	75	or	fl ʒiiss
Aquæ q. s.	ad 1000		Oii

M. Sig.: Use externally as directed.

Or:

The following may be used in the same manner as the picric acid solution:

℞.	c.c.		
Liquoris alumini acetatis (N. F.)	500	or	Oi

M. Sig.: Use externally as directed.

Or:

℞.	c.c.		
Acidi borici	30	or	ʒi
Petrolati liquidi	500		Oi

M. Sig.: Apply externally.

If an ointment is desired the following may be used:

℞.	
Petrolati q. s.	

M. Sig.: Use externally.

Or:

℞.	gm.		
Bismuthi subnitratis	20		ʒv
Unguenti acidi borici	100	or	ʒiii
Petrolati	ad 300		ad ʒx

M. Sig.: Use externally.

Many otherwise excellent preparations contain enough lead to cause, not infrequently, symptoms of poisoning, even to the extent of lead colic, and for this reason are to be avoided. Dr. J. C. Biddle, surgeon to the State Hospital for Injured, at Fountain Springs, Pa., claims, in the *Therapeutic Gazette* of June 15, 1907, to have used the following prescription for twenty-three years without a single case of poisoning. He is inclined to think the failure to absorb is due to the acacia.

℞.	gm.		
Sodii bicarbonatis	6		ʒiss
Pulveris acaciæ	100	or	ʒiii
Plumbi carbonatis	250		ʒviii
M. et adde:			
Olei lini q. s.			

Fac unguentum molle. Sig.: Spread on lint or canton flannel and apply to the burned surfaces.

(This subject is to be continued.)

Dysentery.

Dr. James Cantlie, London, in the *British Medical Journal*, June 22, 1907, states that the best treatment for patients who return to Great Britain from the tropics and develop dysentery is the ipecac and opium treatment. "The Epsom salt treatment in this country (Great Britain) fails, as a rule, and it must be noted that treatment by ipecacuanha is more likely to insure a permanent cure than that by Epsom salts. After having had the stools examined microscopically for ova, or if that is impossible, after the administration of three 4-grain doses of santonin, a dose of castor oil is given. When the

bowels are well cleared and the ipecacuanha is to be administered at, say, 10 a. m., proceed as follows: At 9:40 give 20 minims of tincture of opium by the mouth; at 9:50 place a mustard plaster on the epigastrium (these precautions are given to allay the tendency to vomiting); at 10 o'clock give 30 grains of freshly powdered ipecacuanha root in cachets; keep the patient lying down with the head low, with directions to move about as little as possible. Should vomiting occur within a few minutes the dose must be repeated. For three hours it is well to give nothing by the mouth, but if thirst distresses, small pieces of ice may be placed in the mouth occasionally. After three or four hours weak tea or beef-tea may be given, and the regular 'feeds' afterward gone on with. On the following day give 25 grains of ipecacuanha with the same precautions. The dose of ipecacuanha is repeated on successive days in doses of 20, 15 and 10 grains respectively. The smaller doses are to be given even should the first dose bring down a healthy stool. No food should be given for three hours before giving the ipecacuanha nor for three hours after. The tendency to vomit is so slight after the second day that the opium may be withheld and the times of fasting lessened."

The following prescriptions will carry out the above suggestions:

℞. gm.
Santonini ..... 0.60 or gr. x

Fac capsulas amylaceas (cachets) 3. One wafer, with water, every three hours.

[The dose of santonin recommended is large and has caused poisoning.—Ed.]

To be followed by:

℞. c.c.
Olei ricini ..... 30 or ℥i

Sig.: Take at one dose in black coffee.

After the bowels have been thoroughly cleared by the oil, give:

℞. cc.
Tincturæ opii .....25 or ℥i

Sig.: Twenty drops, in water, twenty minutes before the ipecac is administered.

[Many prefer to give morphin hypodermatically.—Ed.]

Ten minutes after giving the opium apply a mustard plaster over the stomach.

Ten minutes later, i. e., twenty minutes after the administration of opium, give the dose of ipecac.

℞. gm.
Pulveris ipecacuanhæ ..... 10 or ℥iiss

Fac chartulas vel capsulas amylaceas (cachets) 10. Sig.: Two powders at once on the first day; a little more than one and a half on the second day, preceded by the opium as before; a little less than one and a half on the third day; one on the fourth day. Then:

℞. gm.
Pulveris ipecacuanhæ ..... 5 or gr. lxxv

Fac capsulas amylaceas (cachets) 10. Sig.: One wafer a day.

Opium (Morphin, Codein) Poisoning.

The symptoms of toxic action of opium develop in about the following order: There is first drowsiness, then increased sensibility, respirations become gradually slower and slower, the pulse weak and rapid, skin cool, sometimes moist, pupils tightly contracted except just before death, when they often dilate, the stupor becomes a coma until death takes place by paralysis of the respiratory center.

The chemical antidote, if the alkaloids of opium are in the stomach, is tannic acid, 2 grams (30 grs.) stirred up in a glass of warm water and drunk at once. If a tube is not immediately at hand for washing out the stomach (the best method), 1/10 gr. of apomorphin hydrochlorid should be administered hypodermatically, unless mustard water or 2 grams (30 grs.) of zinc sulphate stirred up in water and administered by the mouth has immediately caused vomiting. After the stomach contents have been completely evacuated, if narcosis continues, the stomach should be washed out several times at intervals of an hour, as morphin is excreted into the stomach from the blood. The urine should also be repeatedly evacuated with a catheter. Strong saline cathartics may later be administered.

Whether or not morphin can be antagonized in the blood by an opponent when it is present in toxic doses is a question. Many investigations have been made with its physiologic opponent, atropin, and we may sum up the results of these investigations as follows:

1. There is no doubt that a combination of morphin with atropin administered simultaneously will allow a larger dose of morphin to be administered without toxic effect.

2. When poisonous doses of opium or morphin have been taken and atropin is immediately injected hypodermatically in full physiologic (as 1/100 of a grain) dose, then the toxic effects of morphin may not develop.

3. If toxic symptoms from opium poisoning are in evidence and well established, small doses of atropin may be given for the stimulant circulatory effect, but will apparently have but slight effect on the opium poisoning, and large antagonistic doses of atropin, i. e., doses of atropin that without the morphin in the system would be poisonous, should not be given, as the full action of morphin on the respiratory center does not seem to be dissimilar to the full action of atropin on the same center, consequently one poison is added to another, and the result is more danger to the patient.

4. If atropin is given in safe doses to combat the action of opium in the system, the dose should not be frequently repeated, and the first dilatation of the pupil should be the indicator that sufficient atropin has been administered.

Severe flagellations or strenuous muscle exercise, as walking, in conditions of opium poisoning, should not be used, except only in the mildest cases of poisoning. Many an opium death has occurred from the prostration caused by the severe exercise through which the patient was put, as this exercise may be the last straw to force the patient into fatal collapse, and circulatory depression is one of the causes of death in opium poisoning. It is much safer to use friction to the body, to surround the body with dry heat and to employ artificial respiration as long as it is needed, even if it be for hours.

The best cerebral stimulant to use, and one that will counteract some of the toxic effects of opium is caffein, and perhaps no method of administration is better than strong, clear coffee, both by the mouth and by the rectum, and a number of times repeated. Another cardiac and cerebral stimulant in this condition is camphor in saturated solution in olive oil, a hypodermic syringeful injected intramuscularly every half-hour for several doses. Strychnin may be given hypodermatically in 1/30 of a grain dose and repeated in two or three hours, if needed, but strychnin should not be given in too large doses or too frequently, as it certainly in all collapsed conditions can cause cardiac spasm, and the normal diastole of the heart can not properly take place. If the tension is very low, adrenalin or suprarenalin solution (1 to 1,000) may be administered in 1 c.c. (15 minim) doses intramuscularly, and perhaps best not repeated. The lymphatic and blood vessels gradually absorb a little of this solution at a time, giving a gradual physiologic activity of suprarenal stuff.

The Science of Medicine.—It is often said that medicine is not an exact science, and that we can not hope to make it such. I am inclined to demur to that statement, although, of course, much will depend on the meaning we attach to the term "exact science." If the interpretation is strict, what science is entitled to the designation? They are all liable to err, and all depend to some extent on other sciences for their foundation. Much in medicine is quite as exact as any of the sciences.—Alexander McPhedran, M.D., in the *Canadian Practitioner and Review.*

Pharmacology

[CONTRIBUTION FROM THE CHEMICAL LABORATORY OF THE AMERICAN MEDICAL ASSOCIATION.]

The following has been submitted to, and its publication approved by, the Council on Pharmacy and Chemistry.

W. A. PUCKNER, Secretary.

CALCIDIN (ABBOTT).

W. A. Puckner and A. H. Clark.

In the advertising literature of the Abbott Alkaloidal Company it is claimed that Calcidin (Abbott) produces therapeutic effects entirely different from those obtained from iodin in any other form. In view of this and similar extravagant claims, and because the statements made in regard to its composition are vague and confusing, it was considered of interest to determine the nature of this proprietary article. Accordingly an original package of calcidin was purchased in the open market and submitted to analysis, which is printed below.[1]

From this analysis we calculate the composition of calcidin to be:

	Per cent.
"Available" iodin (liberated on acidulation)	9.20
Calcium iodid (CaI_2)	5.71
Calcium oxid (CaO)	18.45
Calcium carbonate ($CaCO_3$)	34.45
Corn starch (anhydrous)	16.13
Iron and aluminum	Traces
Magnesium oxid (MgO)	.35
Water (by difference)	15.71
	100.00

In other words, we conclude that calcidin is essentially a mixture of iodin, calcium iodid, lime and corn starch and that the preparation is made by mixing ordinary iodin, lime and corn starch, the calcium iodid and some calcium iodate being formed by the action of the lime on the iodin in the presence of moisture. The exact amount of calcium iodid found in different specimens of calcidin will vary in accordance with the amount of moisture present and the age of the product.

While it is claimed that calcidin produces "therapeutic effects entirely different from those obtained from iodin in any other form," in reality the introduction of calcidin into the acid stomach contents results in such chemical changes that it corresponds to giving iodin, calcium iodid and calcium chlorid, each 65 mg. (1 grain) of calcidin being equal to about 6 mg. (1/10 grain) iodin, 4 mg. (1/15 grain) calcium iodid and 50 mg. (4/5 grain) calcium chlorid.

As a comparison, the average dose of Liquor Iodi Compositus, U. S. P. (Lugol's solution) is 0.2 c.c. (3 min.), and these 3 minims contain 10 mg. (1/6 gr.) of iodin. The dose of calcidin is given as 1/3 to 2 grains, and this will contain 1/30 to 1/5 of a grain of iodin. In other words, the full dose (2 grains) of calcidin contains a little less iodin than 3 minims of Lugol's solution.

CALCIDIN TABLETS.

Having in mind past experiences, where proprietary preparations put up in different forms have differed more or less in composition, sometimes to the extent that the different forms resembled each other in name only, and also realizing the difficulty of making a mixture of lime and iodin into tablets without serious decomposition, the examination of calcidin tablets was taken up.

This examination demonstrated the fact that calcidin tablets do not have the same composition as calcidin itself, but instead are essentially tablets of calcium iodid. While 1 grain of calcidin is equal to 1/10 grain of iodin, 3 calcidin tablets, which represent 1 grain of calcidin, are equivalent to but 1/83 grain iodin. While the recommended dose of calcidin itself will contain 1/30 to 1/5 grain of iodin, the same amount given in the form of calcidin tablets is equivalent to only 1/250 to 1/40 grain iodin.

ANALYSIS OF CALCIDIN.

1. Calcidin is a bluish black powder having the odor of iodin. Extracted with water, a clear colorless solution is obtained and a white residue remains. The residue treated with acids liberates carbon dioxid abundantly. A microscopic examination of this residue shows the presence of corn starch in large quantities. The solution, when acidulated, liberates iodin. When calcidin is charred a residue remains which is soluble in hydrochloric acid, and contains traces of iron and aluminum, large quantities of calcium and some magnesium.

Iodin.—Total iodin (*a*), 1.3933 gm. calcidin was mixed with a solution of 1 gm. potassium hydroxid in 10 c.c. water, evaporated to dryness and ignited. The residue was extracted with small portions of hot water, using in all about 75 c.c., filtered, and the filtrate collected in a separator. When cool 10 c.c. hydrochloric acid was added, followed by 10 c.c. solution of ferric chlorid U. S. P. When, after standing one-half hour, the liberated iodin was extracted with carbon disulphid and titrated with tenth-normal sodium thiosulphate V. S., 15.25 c.c. were required, indicating 0.1920 gm., or 13.78 per cent. iodin.

(*b*) 1.2079 gm. calcidin was fused with potassium hydroxid as outlined above. The residue was dissolved in water by the aid of nitric acid and the liquid filtered. In the filtrate the total halogen content was determined by precipitation with silver nitrate and calculated as silver iodid.

0.3197 gm. silver halide was obtained, equivalent to 0.1727 gm., or 14.3 per cent. iodin.

In a duplicate determination 1.2214 gm. calcidin gave .3236 gm. silver halide, equivalent to .1748 gm., or 14.31 per cent. iodin.

Average: 14.13 per cent. total iodin.

Available Iodin.—Iodin liberated on acidulation was determined as follows:

(*a*) A weighed quantity of calcidin was added to 50 c.c. water and acidulated with hydrochloric acid. The liberated iodin was then titrated with tenth-normal sodium thiosulphate V. S., using as indicator the blue color of the starch iodid present. The end point was not sharp and an excess of the thiosulphate V. S. seemed to be necessary to completely destroy the color. Varying results were obtained, averaging about 9.75 per cent. free iodin. This being unsatisfactory, the following method was finally adopted as giving the best results.

(b) 0.7838 gm. calcidin was washed by decantation with small portions of water, filtering each portion and continuing the washing until the filtrate gave no reaction with silver nitrate T. S., and the residue was white. The solution was acidulated with hydrochloric acid and the iodin set free determined with tenth-normal sodium thiosulphate V. S.; 5.73 c.c. were required, indicating .0721 gm., or 9.2 per cent. iodin.

In a duplicate determination .7049 gm. calcidin required 5.15 c.c., indicating .0648 gm., or 9.2 per cent. iodin.

Average, 9.2 per cent. available iodin.

Calcium.—(*a*). 1.3710 gm. calcidin was ignited to expel iodin and to destroy starch. The residue was dissolved in hydrochloric acid, and after removal of iron and aluminum the calcium was precipitated as calcium oxalate, and weighed as calcium oxid.

Found .5325 gm. calcium oxid, indicating 27.76 per cent. calcium (Ca).

In a duplicate, .5902 gm. calcidin gave .2295 gm. calcium oxid, indicating 27.78 per cent. calcium.

Average: 27.77 per cent. calcium.

(b) Calcium was converted into calcium sulphate by direct ignition of calcidin with sulphuric acid. 0.3497 gm. calcidin gave a residue weighing 0.3405 gm., indicating 28.67 per cent. calcium.

In this determination the traces of iron, aluminum and magnesium were weighed as calcium sulphate. For this reason the result is not considered in calculating the composition of calcidin, but is included as confirming the estimation under the first method and as demonstrating the absence of appreciable quantities of alkali metals.

Magnesium.—Magnesium was determined in the filtrate from the calcium oxalate precipitation. After evaporating to dryness and igniting to expel ammonium salts, the residue was dissolved in dilute hydrochloric acid and filtered. In this filtrate, magnesium was determined in the usual way.

1.371 gm. calcidin gave 0.016 gm. magnesium pyrophosphate, indicating .21 per cent. magnesium (Mg).

Carbon Dioxid.—Carbon dioxid was determined by the aid of Knorr's apparatus as outlined in U. S. Department of Agriculture, Bureau of Chemistry Bulletin, No. 65, p. 98. The apparatus was modified by placing between the condenser and the bulb containing the sulphuric acid a calcium chlorid tube charged with sodium sulphite. This was found necessary to absorb iodin carried over when the solution was heated to expel carbon dioxid.

1.8068 gm. calcidin gave .277 gm. CO_2, indicating 15.32 per cent. carbon dioxid.

In a duplicate, 1.9869 gm. calcidin gave .2985 gm. CO_2, indicating 14.98 per cent. carbon dioxid.

Average: 15.15 per cent. carbon dioxid.

Starch.—The starch was estimated by treating 1.1098 gm. calcidin with small portions of cold water until all iodin was removed. The lime was next removed by washing with very dilute hydrochloric acid. The insoluble residue collected on a weighed filter and dried to constant weight, weighed .1790 gm., indicating 16.13 per cent. starch.

In calculating the probable composition of the powder from the above analysis, it was assumed that the iodin, which is not liberated when dilute acid is added, is present as calcium iodid, that a part of the calcium is in combination with the carbon dioxid, and that the remaining calcium is present as calcium oxid or calcium hydroxid.

The presence of such a large per cent. of carbon dioxid would seem to indicate that the lime had been decomposed by exposure to air or otherwise. Therefore, the calcium not present as calcium carbonate or iodid is probably present as calcium hydroxid. Following the usual custom, it is calculated to calcium oxid, however, as is also the magnesium. The water present as water of hydration and also that normally contained in the starch is reported as "difference."

The analysis shows that the specimen of calcidin contained:

	Per cent.
Iodin (I)	14.13
Calcium (Ca)	27.77
Corn starch (anhydrous)	16.13
Magnesium (Mg)	.21
Iron and aluminum	Traces
Carbon dioxid (CO_2)	15.15

The analysis shows that the attempt to produce calcidin tablets was a failure because of the tendency of iodin to react with bases to form iodates and the tendency of the iodates to decompose with formation of iodids, which facts are well known to chemists.

The details of the analysis are given below:

COMMENTS.

Two points are especially worthy of emphasis in the above report by the Association chemists. The first is the old, old story so common in the history of nostrums and "patent medicines," of discrepancies between the extravagant, unscientific and absurd claims made by the manufacturers or promoters and the actual facts as revealed by a scientific examination. Inspection of the advertising matter for calcidin shows that its promoters make the following statements regarding it:

Calcium Iodized, Calcidin (Abbott) is an entirely unique substance, being neither a true chemical compound, nor a simple mixture of its ingredients. Briefly, it is calcium carrying an excess of freely available Iodin.

In a circular discussing the nature of the product is this statement:

It is a new compound of iodin and calcium easily broken up when in contact with acids and of remarkable therapeutic value.

Another advertisement states:

Calcidin, Abbott (Calx Iodata) is a unique product. It consists of lime unchanged or modified except by hydration, bearing a definite percentage of available Iodin. There is no essential chemical union between the two, neither is it a mere mechanical mixture of calcium and iodin, but by a peculiar [?] process (which is stopped at precisely the right moment [sic]) the lime becomes a carrier for the iodin, which is liberated when the substance is brought in contact with acids in the digestive tract.

It is also claimed that calcidin produces "therapeutic effects entirely different from those obtained from iodin in any other form;" that it is "the most effective and only non-injurious preparation of iodin for internal use," and that it possesses all of the valuable properties of iodin with all of the objectionable effects left out.

This enthusiastic eulogy of the preparation closes with the following climax:

If it is a case in which Iodin (divested of all its objectionable features) would be "the remedy of choice" use calcidin and rest assured the result will be satisfactory.

Certainly a preparation possessing such startling and epoch-making qualities is worthy of careful investigation.

It is somewhat disappointing, after having our expectations brought up to such a point, to be informed that calcidin is simply a mixture of iodin, lime and corn starch, and that the results of its administration are exactly similar to those obtained when giving an equal amount of ordinary iodin, calcium iodid and calcium chlorid. Had the promoters of this preparation advertised their product as a convenient method of administering a certain amount of these three chemicals, there would have been no ground for criticism. It is a different matter, however, to make extravagant and ridiculous claims of unique and unequaled therapeutic properties, which are not, in any sense, borne out by the facts in the case.

ANALYSIS OF CALCIDIN TABLETS.

2. A one-ounce package of 1/3 grain calcidin tablets was purchased in the open market and the available and total iodin content of the tablets determined.

"Available" Iodin.—The method of estimating available iodin adopted in the analysis of calcidin did not work because of difficulty in filtration, and method (*a*) was used. Fifty tablets were triturated with water, the mixture was acidulated with hydrochloric acid and the liberated iodin determined with sodium thiosulphate. The end point was not sharp, but less than 1 c.c. of tenth-normal sodium thiosulphate V. S. was consumed, equivalent to .01259 gm. iodin; hence each tablet contains not more than .00025 gm. (1/250 grain) "available" iodin.

Total Iodin.—(*a*) Fifty tablets were fused with potassium hydroxid. The residue, treated as outlined for the estimation of total iodin in calcidin, required 12.2 c.c. tenth-normal sodium thiosulphate, V. S., indicating .1536 gm. iodin, or .0030 gm. iodin per tablet.

(*b*) Fifty tablets were mixed with 2 gm. potassium hydroxid and 5 c.c. water, evaporated to dryness and ignited. In this residue the total halogen content was determined gravimetrically, as outlined under calcidin. .2857 gm. silver halide was obtained, indicating .1544 gm. iodin or .0031 gm. per tablet.

In a duplicate determination, 50 tablets gave .2764 gm. silver halide, indicating .1493 gm. iodin, or .0031 gm. per tablet.

Since each tablet contains .0030 gm. total iodin (average of the three estimations), and liberates on acidulation .00025 gm. iodin, the difference, .00275 gm. iodin, is probably present combined with calcium as iodid. This indicates about 0.0031 gm. (1/18 grain) calcium iodid per tablet.

One other point worthy of emphasis in this connection is that, according to the advertisements of calcidin, the great advantage presented by the use of calcidin tablets is that they contain "free iodin." Calcidin and calcidin tablets are supposed to be practically the same thing, but, as is so often the case in proprietary preparations, the statements made by the manufacturers are not borne out by the chemical analysis. Calcidin tablets are said to contain 1/3 of a grain of calcidin and hence should contain 1/30 of a grain of "free iodin" per tablet. As a matter of fact each tablet contains only 1/250 of a grain of "free iodin," an amount so small as to be of no practical value, the remaining iodin being in the form of calcium iodid, *a substance condemned by the manufacturers of calcidin as practically inert.* The advertising matter specially emphasizes the statement that "free iodin" alone is of value and that iodids are practically useless. Such being the case, it is unfortunate that calcidin tablets contain practically no "free iodin" at all and that all of the iodin present is in the form of iodids. In other words, the preparation does not contain the form of iodin which it is claimed to contain, and does contain the form of iodin which the promoters insist is of little value.

The practical lesson to be drawn from the above report is that any manufacturer who makes extravagant claims, or any product which is advertised by means of statements of marvelous methods of manufacture, unique properties, unheard-of chemical contents and the like, is to be viewed with suspicion. Calm statements of scientific and chemical facts are one thing and circus poster methods of advertising are quite another.

Correspondence

Family Records—A Plea for the Systematic Preservation of Exact Data—Answers Desired.

1504 PINE STREET, PHILADELPHIA, Aug. 23, 1907.

To the Editor:—Historians are constantly hindered in their search for truth by the absence of exact records, especially as to the lives of individuals. Nowhere are these kept with completeness and exactitude. Even the courts of law, the county and municipal authorities, make only partial provision for the future in this particular. Even at the present enlightened time recourse is constantly had to the "family Bible," in which the custom prevails to place some account of births and deaths, which gives, at best, only names and ages, with possibly some fragmentary comments on acts. Clergymen do sometimes keep books containing registrations of marriages, births and baptisms, rendering a meager and irregular assistance.

Old-time physicians were accustomed likewise to take account of some such data, also the more careful ones kept notes of illnesses. Not all physicians, even now, take careful notes of cases, or only the, to them, more important ones. All this may be of use when preserved; they too often are lost or destroyed, but at best are manifestly inadequate to make history or settle disputes as to property or other legal issues.

I venture to assert that we physicians would make ourselves a vastly greater power for good, enhance our potentiality in the community, if we should do our duty by contributing systematically to the exactitude of records. At the same time, our duty to our patients would be better discharged and we should earn gratitude even long after we are dead.

I here offer a plan suggested long ago:

To solve clinical problems successfully the physician must possess ample facts of two kinds, present and past. He must ascertain the status of his patient, both to-day and previously. Unless a fair knowledge be acquired of antecedent conditions, the elucidation of the immediate problem can be only imperfect. To minimize the gravity of the earlier history is to fall into errors and invite blame. The public is quick to criticise our sins, not only of commission, but especially of omission. They demand, naturally, that we shall be able to tell them correctly what is amiss now; also we are constantly forced to prophesy, and a future is dark without adequate light from

antecedent facts, however much skill we may possess in interpreting the phenomena of Nature and her complex derangements. Some physicians may have the gift of divination, but so rare is this that the only safe course is to be armed by all attainable, all relevant, incidents. Then and then only, can we draw rational inferences or make exact deductions.

In the conduct of any large business one of the primary requisites is a knowledge of all obtainable collateral facts. No business man will blame an employé for errors committed if the cause is clearly absence of information essentjal to the understanding of the problem. In every well-regulated business office it is customary to devote a large part of the office force to the securing, sifting, systematizing of facts, direct and indirect, and placing them ready to hand. Success is recognized to follow in proportion as this data is adequate, and wisdom is exhibited in its prompt utilization. The laity criticise us sharply and justly for our lack of consistency in views on related subjects, diversities in belief as to causes, phenomena, progress of human derangements; above all, for seeming contrariness in selection of remedies, and guesswork as to finalities.

Yet it is by no means all our fault that medicine can still be termed inexact. Despite centuries of effort, we still lack many fundamental facts. The public should be made to know that research workers in medicine are estimated by experts in other scientific lines to have contributed more to the sum total of human knowledge than the aggregate of all the other exact sciences.

The chief obstacle in solving clinical problems lies in the absence of adequate case histories.

To remedy this, I would propose the very general employment of family case-history books. These should be simple yet complete in their arrangement, with clear, exact directions for use by parents, physicians and others. Physicians should be able to buy them cheaply in quantity and supply them to all the families they attend gratis, or for a small sum. If this were done, or wherever done, there would be at least a more or less satisfactory record kept of happenings, peculiarities, data on growth, development (mental and physical), accounts of ailments, illnesses, in sequence. When the medical attendant is confronted by the problem of an ailment he would be able, by consulting this record, to obtain invaluable light on many otherwise obscure points. To depend on the memory of parents, or the records of other physicians, is far from satisfactory. It would not be long before all intelligent people would adopt the custom. The records would thus be entirely private. When a family transfers its confidence from one physician to another, it is often most difficult to secure cordial cooperation and comparison of notes. Whenever a specialist is needed he may desire information of a sort not to be had at all. Such a family record could be so devised, by the help of specialists in different lines, as to supply much thus required.

In the taking of histories of children the burden will fall naturally on the mother or other near relatives. It can be best done coincident with the occurrence of notable circumstances, but is most feasible while the facts are fresh in the memory. Invaluable records have been made by parents which furnish data for child-study, comparative psychology, developmental stages, and many similar researches.

The family physician is the one whose duty it is to oversee the members of a family whenever, in his judgment, there is necessity, to watch growth, to confer on subjects consonant with his official connection. Whenever he visits the family and makes observations, the book should be submitted to him to make notes.

During severe or protracted illness, when a trained nurse is employed, the records should be kept in this book. In the interest of exactitude, there should be certain pages of blank anatomic diagrams, such as are used in hospitals and by careful clinicians, on which can be marked the site of lesions of chest, of heart, or other parts.

Details of form and character need not be given here. I consulted a publisher as to the wisdom of issuing some such systematic inexpensive case-record book. He is of the opinion that "it might not pay." My purpose is to beg an expression of opinion from as many as possible and then to form practical conclusions. Would not such data prove of high value to physician, families and perhaps even to historians as well as lawyers? Postal card replies will suffice.

J. MADISON TAYLOR.

Milk Supervision and Certification by County Societies.

JACKSON, MICH., Aug. 28, 1907.

To the Editor:—Enclosed find our scheme for obtaining pure milk, which is self-explanatory. As you will notice, our plan is somewhat different from the usual one of certifying the product from only one dairy. Any dairyman who will comply with our rules and furnish a product meeting standard requirements as to bacterial content and food elements may have our certification. The scheme has already secured good results.

C. G. PARNALL.

[The work to which Dr. Parnall calls attention is being done through a committee appointed by the Jackson County (Mich.) Medical Society. A circular and a card of application for certification are sent to the dairymen. The former embodies the most important recommendations and measures for producing clean milk, requiring the dairyman to agree to inspection by the committee and to abide by its rules and regulations. Any case of communicable disease occurring in the household of any person engaged in handling the milk or milk utensils must be reported at once to the committee. The rules also require cleanliness of the cows and stables; the latter are to be whitewashed at least once a year. The water supply must be uncontaminated and a separate, clean milk house provided, which must be used for no other purpose. The milkers must not have any communicable disease, must wash their hands before each milking, and the utensils must be kept scrupulously clean. The milk from diseased cows must not be shipped; the milk must be strained in the milk house only; it must be cooled below 55 degrees, and no preservative, coloring or other adulteration is to be permitted. Then follow the detailed recommendations of the health department of New York City as suggestions. These suggestions treat the subject of production of clean milk with considerable detail and must certainly be of great value to dairymen who wish to improve the quality of their milk to meet the demands of sanitary science. The application card binds the dairyman to permit inspection and the taking of reasonable samples and to abide by the rules of the committee. This work is excellent and ought to be imitated by many other county societies. It is such an enterprise as this that compels recognition by the public.]

Miscellany

Arabian Contributions to Medicine.—In a letter to the *Boston Medical and Surgical Journal*, Dr. E. T. Williams, Roxbury, Mass., refers to Dr. Osler's recent statement that the physicians of the Arabian school made no solid contributions to anatomy or physiology, and says that while this is undoubtedly true, yet the Arabians made valuable contributions to science. Geber, in the eighth century, discovered arsenious acid and corrosive sublimate. Albucasis, in the twelfth century, discovered alcohol and the art of distillation. Alhazan of Cairo, in the eleventh century, wrote a valuable treatise on optics and described the properties of lenses. Rhazes of Bagdad, in the tenth century, gave the first accurate description of smallpox; Avicenna, in the eleventh century, described malignant pustule, and Avenzoar of Seville, in the twelfth century, gave a description of the itch. We owe to the Arabians the methodical use of opium as a remedy, which, though used by Dioscorides and some of the Grecians to a certain extent, was apparently unknown to the Galenists. They also used mercury, which was first made known to the Europeans as a medicine by the Moors and Saracens, was adopted by Guy de Chauliac and Paracelsus and formed the chief ingredient of the prescription sold by Barbarossa, the corsair of Mitylene, to Francis I to cure his pocks. We can not, says Dr. Williams, date a letter without the Arabic nu-

merals, or compound a salt solution without an "alkali," a purely Arabic word. Altogether, he declares, we owe a good deal to the Arabians, which we ought not wholly to forget.

Tuberculous Glands in the Neck.—J. Eddy Blake, Brooklyn, in the *Long Island Medical Journal*, emphasizes the following points: Tuberculosis is tuberculosis, no matter where found or under what conditions. Tuberculous glands in the neck are simply one form of tuberculosis, and are apt to be followed by, if they are not complicated with, other forms of the disease. The occurrence of tuberculous glands in a patient marks that patient as particularly liable to tuberculosis in any form, and the treatment of tuberculous glands in the neck is the treatment of incipient tuberculosis, plus the treatment of the local condition.

The Pathologist.—The man who specializes in clinical pathology should not merely be allowed, but encouraged and urged, to care, personally, besides his regular work, for as many patients as he has time for. Otherwise his specialty needlessly stoops his shoulders and narrows his intellectual vision; sets him, in Carlyle's droll words, to "nosing in every cranny and dog-hole" of science instead of keeping on the main road.—William N. Berkeley, M.D., in the *Long Island Medical Jouranl.*

Clinical Pathology—Its Value.—For many years to come clinical pathology, while it will offer aid—often valuable, sometimes invaluable—in the work, will not contrive to bring medical diagnosis out of the problematical and into the mathematical sphere.—William N. Berkeley, M.D., in the *Long Island Medical Journal.*

The Public Service

Army Changes.

Memorandum of changes of stations and duties of medical officers, U. S. Army, week ending Aug. 31, 1907:

Reynolds, F. P., surg., leave of absence extended fourteen days.

Fisher, H. C., surg., granted thirty days' leave of absence.

Phalen, J. M., asst.-surg., granted fifteen days' leave of absence.

Billingslea, C. C., asst.-surg., granted twenty-five days' leave of absence.

Fisher, H. C., surg., in addition to his other duties at Fort Logan, Colo., will report to the commanding general, dept. of Colorado, Denver, for temporary duty as chief surgeon.

Craig, E. J., dental surg., granted leave of absence from the Philippines division for one month, with permission to visit the United States.

Lincoln, H. F., cont. surg., reported at Fort Robinson, Neb., for temporary duty.

Wiggin, D. C., cont. surg., reports at Fort Levett, Me., for duty.

Chase, A. M., cont. surg., relieved from duty at Fort Reno, Okla., and will proceed to Fort Sam Houston, Tex., for duty.

Dade, W. H., cont. surg., leave of absence extended six days.

Casaday, G. H., dental surg., returned to duty at Army General Hospital, Presidio of San Francisco, from leave of absence.

Phelan, H. du R., cont. surg., returned to duty at Fort Baker, Cal., from leave of absence.

Dillon, G. P., cont. surg., granted leave of absence for three months, to take effect on or about Oct. 1, 1907.

Archer, W. M., jr., cont. surg., will proceed from Washington, D. C., to Fort Sam Houston, Texas, for duty.

Navy Changes.

Changes in the Medical Corps, U. S. Navy, for the week ending Aug. 31, 1907:

Dorsey, B. H., asst.-surg., detached from duty at the navy recruiting station, Des Moines, Iowa, and ordered to Washington, D. C., September 3, for examination for promotion, then to wait orders.

Oman, C. M., passed asst.-surg., detached from the *Arkansas* and ordered to the *Illinois*, September 9.

DeLaney, C. H., passed asst.-surg., detached from the *Florida* and ordered to the navy yard, New York.

Vickery, E. A., asst.-surg., detached from the *Illinois* and ordered to the navy yard, Boston.

Martin, J. C., pharmacist, detached from the naval dispensary, Washington D. C., and ordered to the U. S. Naval Medical School Hospital, Washington, D. C.

Schetky, L. O., pharmacist, detached from the naval hospital, Norfolk, Va., and ordered to the naval hospital, Washington, D. C.

Reynolds, C. E., pharmacist, detached from the naval medical school hospital, Washington, D. C., and ordered to the bureau of medicine and surgery, Navy Department.

Jones, A. M., acting asst.-surg., sick leave revoked; ordered to the naval recruiting station, Des Moines, Iowa.

Public Health and Marine-Hospital Service.

List of changes of station and duties of commissioned and noncommissioned officers of the Public Health and Marine-Hospital Service for the seven days ended Aug. 28, 1907:

Kerr, J. W., assts.-surgeon general, on the expiration of his present leave, directed to proceed to Cincinnati and Cleveland, Ohio; Syracuse, Elmira, Rochester and New York, N. Y.; Newark, N. J., and Philadelphia, for special temporary duty, on completion of which to rejoin his station in Washington, D. C.

Kalloch, P. C., surgeon, granted leave of absence for thirty days from Sept. 10, 1907.

McIntosh, W. P., surgeon, directed to assume temporary charge of the service at Portland, Maine, Quarantine, during the absence, on leave, of Surgeon P. C. Kalloch.

Smith, A. C., surgeon, directed to proceed to Boston, reporting to Captain K. W. Perry for temporary duty aboard the revenue-cutter *Gresham*, on completion of which to rejoin his station in Pittsburg, Pa.

Nydegger, J. A., passed assist.-surg., granted leave of absence for one month and seven days from Sept. 10, 1907.

Cumming, H. S., passed assist.-surg., granted leave of absence for one month from Oct. 1, 1907.

Foster, M. H., passed assts.-surg., granted leave of absence for two months and eleven days from Oct. 9, 1907.

Ramus, Carl, passed asst.-surg., granted leave of absence for seven days from Aug. 7, 1907, under paragraph 191, Service Regulations.

Stansfield, H. A., passed asst.-surg., leave of absence granted Passed Assistant Surgeon Stansfield for three months from July 12, 1907, amended to read for one month and eight days from July 12, 1907.

Holt, John M., passed asst.-surg., granted twenty-three days' extension of annual leave from Sept. 7, 1907.

Stimson, A. M., passed asst.-surg., granted leave of absence for three weeks from Sept. 3, 1907.

Foster, A. L., asst.-surg., relieved from duty at Naples, Italy, on the return of Passed Assistant Surgeon A. J. McLaughlin, and directed to proceed to New York City.

Collins, G. L., asst.-surg., granted leave of absence for one day, Aug. 27, 1907.

Guthrie, M. C., asst.-surg., granted leave of absence for thirty days from Sept. 5, 1907.

Stiles, Ch. W., Chief Division of Zoölogy, Hygienic Laboratory, granted leave of absence for nine days—four days from August 14 and five days from Aug. 26, 1907.

Porter, J. Y., sanitary inspector, directed to make inspections of quarantine stations of the service in the state of Florida when necessary.

Friedman, H. M., acting asst.-surg., transferred from Philadelphia to Ellis Island, N. Y., to take effect Aug. 24, 1907.

Gustetter, A. L., acting asst.-surg., leave of absence granted Acting Assistant Surgeon Gustetter amended to read from Aug. 24, 1907, instead of Sept. 1, 1907.

Mason, William C., acting asst.-surg., granted leave of absence for five days from Sept. 16, 1907.

Riemer, H. B. C., acting asst. surg., granted leave of absence for fourteen days from Aug 17, 1907.

Schwartz, Louis, acting asst.-surg., transferred from Ellis Island, N. Y., to Philadelphia, effective Aug. 24, 1907.

Tuttle, Jay, acting asst.-surg., granted leave of absence for fourteen days from Aug. 15, 1907.

Weldon, William A., acting asst.-surg., granted leave of absence for one month from Sept. 10, 1907.

Gahn, Henry, pharmacist, granted leave of absence for ten days from Aug. 19, 1907.

BOARDS CONVENED.

Under date of Aug. 26, 1907, boards of medical officers were convened as follows, for the purpose of conducting medical examinations of candidates for appointment as cadets in the Revenue-Cutter Service:

At Galveston, Texas.—Passed Assistant Surgeon G. M. Corput, Chairman, and Acting Assistant Surgeon Wm. H. Gammon, Recorder.

At Washington, D. C.—Assistant Surgeon-General J. M. Eager, Chairman, and Passed Assistant Surgeon J. W. Trask, Recorder.

At Detroit.—Surgeon Fairfax Irwin, Chairman, and Assistant Surgeon E. R. Marshall, Recorder.

At Baltimore.—Surgeon L. L. Williams, Chairman, and Passed Assistant Surgeon J. T. Burkhalter, Recorder.

At Stapleton, N. Y.—Passed Assistant Surgeon H. W. Wickes, Chairman, and Assistant Surgeon R. B. Scofield, Recorder.

At Boston.—Surgeon R. M. Woodward, Chairman, and Assistant Surgeon T. W. Salmon, Recorder.

At Chicago.—Surgeon G. B. Young, Chairman, and Passed Assistant Surgeon B. S. Warren, Recorder.

At Portland, Me.—Surgeon W. P. McIntosh, Chairman, and Acting Assistant Surgeon A. F. Stuart, Recorder.

At San Francisco.—Surgeon H. W. Austin, Chairman, and Passed Assistant Surgeon J. D. Long, Recorder.

At Philadelphia.—Surgeon J. M. Gassaway, Chairman, and Acting Assistant Surgeon Louis Schwartz, Recorder.

Health Reports.

The following cases of smallpox, yellow fever, cholera and plague have been reported to the Surgeon-General, Public Health and Marine-Hospital Service, during the week ended Aug. 30, 1907:

SMALLPOX—UNITED STATES.

California: San Francisco, August 11-17, 4 cases.
Kansas: Kansas City, August 11-17, 1 case.
Massachusetts: South Groveland, July 1-August 17, 20 cases.
Michigan: Detroit, August 11-17, 1 case.
Nebraska: Lincoln, April 1-July 31, 95 cases.
New York: Buffalo, August 11-17, 1 case.
North Carolina: General, June 1-30, 62 cases; Greensboro, August 11-17, 1 case.
Ohio: Columbus, June 1-30, 3 cases.
South Dakota: Sioux Falls, August 11-17, 1 case.
Texas: San Antonio, August 11-17, 1 case.
Vermont: West Berlin, April 26-August 20, 43 cases.
Washington: Seattle, July 1-31, 17 cases; Spokane, August 11-17, 1 case; Tacoma, August 11-17, 1 case.

SMALLPOX—FOREIGN.

Austria: Trieste, August 3-9, 1 case; Vienna, July 28-August 3, 2 cases.
Brazil: Bahia, July 14-27, 11 cases; Rio de Janeiro, July 12-28, 4 cases, 2 deaths; Santos, June 1-30, 1 case, 1 death.

Canada: Halifax, August 11-17, 1 case.
China: Cheefoo, July 14-27, 2 cases (case July 20 from S. S. *Pennsylvania*); Shanghai, July 14-27, 2 cases, 60 deaths, cases foreigners; deaths natives.
Germany: General, July 21-27, 2 cases.
India: Calcutta, July 7-13, 2 deaths.
Italy: General, August 2-8, 7 cases; Genoa, June 1-30, 6 cases; Naples, August 10, 1 case, 1 death.
Madeira: Funchal, June 29-August 11, 20 cases, 8 deaths.
Manchuria: Dalny, July 7-14, 4 cases.
Mexico: Aguas Callentes, August 6-17, 10 cases.
Portugal: Lisbon, July 28-August 3, 6 cases.
Russia: Riga, July 28-August 3, 2 cases; St. Petersburg, July 21-27, 1 case; Warsaw, July 1-27, 5 deaths.
Spain: Almeira, July 1-31, 8 deaths; Barcelona, August 1-10, 4 deaths; Cadiz, July 1-31, 5 deaths; Seville, July 1-31, 4 deaths, Valencia, July 21-27, 4 deaths.
Straits Settlements: Penang, July 7-13, 1 case, 1 death.
Turkey in Europe: Constantinople, July 28-August 4, 2 cases.
Turkey in Asia: Damascus, July 6-13, present; Bagdad, July 7-13, present; Bassorah, July 14-20, present.
West Indies: Barbados—Bridgetown, August 2-10, 1 case.

CHOLERA.

China: Amoy-Kulangsu, native city, June 30-July 6, 8 deaths daily, estimated; Tientsin, August 15, epidemic.
India: Bombay, July 17-23, 3 deaths; Calcutta, July 7-13, 26 deaths; Rangoon, July 7-13, 1 death.
Japan: Moji, August 20, 26 cases.
Philippine Islands: Manila, July 14-20, 2 cases, 2 deaths.
Russia: Samara, Government District, July 16-August 4, 35 cases, 10 deaths.

YELLOW FEVER.

Brazil: Manaos, July 21-27, 4 deaths.
Cuba: Alacranes, Matanzas Province, August 26, 1 case.
West Indies: Trinidad, Port of Spain, August 4-10, 1 case, 1 death (on S. S. *Atrato*, from Trinidad).

PLAGUE—UNITED STATES.

California: San Francisco, August 28-29, 3 cases, 1 death.

PLAGUE—FOREIGN.

Brazil: Rio de Janeiro, July 14-28, 3 cases, 2 deaths.
China: Amoy-Kulangsu, native city, June 30-July 6, 10 deaths daily, estimated.
Hawaii: Honolulu, July 22-24, 3 cases, 2 deaths (previously reported with case which proved not to be plague).
India: General, July 6-13, 6,812 cases, 4,492 deaths; Bombay, July 17-23, 3 deaths; Calcutta, July 7-13, 18 deaths.
Japan: Formosa, June 30-July 27, 171 cases, 158 deaths.

Marriages

A. DROZDOWITZ, M.D., to Miss Hattye Krulewich, both of Chicago, August 29.

CARL AUGUST PALM, M.D., to Miss Lena Uebel, both of Kenosha, Wis., August 22.

HUGH DOUDNA, M.D., to Miss Ethel Cavanaugh, both of Lake City, Mich., August 21.

J. M. EHLERT, M.D., Dutchtown, LA., to Miss Myra Holmes of New Orleans, July 20.

PAUL RICHE, M.D., to Miss Bessie Adeline Komarow, both of New York City, August 4.

CHAUNCEY G. WRIGHT, M.D., St. Louis, to Miss Alice B. Lay of Oberlin, Ohio, August 14.

EMANUEL ELY SHELLY, M.D., to Miss Ida Olive Brubaker, both of Freeport, Ill., August 20.

GEORGE A. O'CONNELL, M.D., Mobile, Ala., to Miss Lollie Gilreath of Birmingham, Ala., August 27.

BARNET P. WILSON, M.D., Rockville, Md., to Miss Annie Royall Owen, at Lynchburg, Va., August 22.

CHARLES JOSEPH DISS, M.D., Ilion, N. Y., to Miss Constance Fannie Barker of Sidney, N. Y., August 22.

DAVID MOURY, M.D., to Mrs. Leota M. Roebuck, both of Bellefontaine, Ohio, in Toledo, August 22.

HARRY H. EVERETT, M.D., to Miss Martha Blanche Hargreaves both of Lincoln, Neb., August 20.

WILLIS W. WAITE, M.D., Syracuse, N. Y., to Miss Lillian Adelle Cook of Lake Mills, Wis., August 19.

R. TAIT MCKENZIE, M.D., Philadelphia, to Miss Ethel O'Neil of Hamilton, Ont., in Dublin, Ireland, August 19.

FRED L. BATES, M.D., Lima, Ohio, to Miss Bessie Bonnewitz of Van Wert, Ohio, at Covington, Ky., August 23.

FRANCIS EDWARD DELONG, M.D., Philadelphia, to Miss Emma J. Stoffel of Economy, Pa., in Pittsburg, August 22.

WILLIAM H. DOOLITTLE, M.D., Woodstock, Ill., to Miss Mary J. McNair of Winnebago, Ill., in Chicago, August 15.

RALPH T. BELSINGER, M.D., Lancaster, Pa., to Miss Rae M. Howard of Philadelphia, in New York City, recently.

JOHN ANDREW, JR., M.D., Longmont, Colo., to Miss Grace T. Schnur of Newton, at Blessing Hospital, Quincy, Ill., August 21.

Deaths

Horace Granville Leslie, M.D. University of Vermont, College of Medicine, Burlington, 1868; a member of the American Medical Association; once president of the Essex North District branch of the Massachusetts Medical Society; surgeon of the First Tennessee Volunteer Infantry during the Civil War, and since that time a prominent practitioner of Amesbury, Mass.; in 1890 and 1891 representative in the legislature from Amesbury; for several years a member of the local school board, died at his home, August 22, after a long illness, aged 65.

Charles Follen Folsom, M.D. Medical School of Harvard University, Boston, 1870; of Boston, Mass.; a member of the American Medical Association; from 1874 to 1882 secretary of the State Board of Health; in 1879 secretary of the State Board of Lunacy and Charity; for many years one of the physicians to the Boston City Hospital; who on the resignation of Dr. Henry I. Bowditch, was made a member of the National Board of Health, died in New York City, after a short illness, August 20.

John H. Banta, M.D. Bellevue Hospital Medical College, New York City, 1879; a member of the Medical Society of New Jersey and the Passaic County Medical Society; a member of the Paterson (N. J.) Board of Health; died at his home in that city, August 20, from pleurisy following the fracture of two ribs in a fall about two months before, aged 54.

Miles Henry Nash, M.D. Jefferson Medical College, Philadelphia, 1855; surgeon in the Confederate service throughout the Civil War; for 28 years attending physician and house physician of Demilt Dispensary, New York City, and thereafter physician emeritus to the institution, died in Richfield Park, N. J., August 13, after an illness of several months, aged 74.

John J. Thometz, M.D. Rush Medical College, Chicago, 1882; a member of the American Medical Association and of the Chicago Pathological Society; attending physician at the Hospital of St. Anthony of Padua and St. Elizabeth's Hospital, Chicago; who had suffered for a long time from rheumatism, died suddenly at his home from endocarditis, August 7, aged 47.

Charles B. Tucker, M.D. Eclectic Medical College of the City of New York, 1865; a member of the hospital corps of the Army during the Civil War, and for many years a practitioner of Brooklyn, N. Y., died in the Fordham Hospital for Incurables, August 26, from acute ascending paralysis, after an illness of a year and a half, aged 67.

John Leander Hughes, M.D. University of Georgia, Medical Department, Augusta, 1851; a member of the Medical Association of the State of Alabama and Calhoun County Medical Society; said to have been the oldest practitioner of that section of the state, died at his home in Piedmont, August 22, after a short illness, aged 80.

John Elliott Miller, M.D. University of Pennsylvania, Department of Medicine, Philadelphia, 1860; surgeon of the Fifty-seventh Pennsylvania Volunteer Infantry during the Civil War; for many years a practitioner of Hagerstown, Md., died suddenly at his home in that city, from heart disease, August 25, aged 70.

Martin L. James, M.D. Jefferson Medical College, Philadelphia, 1852; formerly professor of practice of medicine in the Medical College of Virginia, Richmond, and dean of that institution; a member of the Virginia Medical Society and of the Richmond Academy of Medicine, died at Mobjack, Va., January 13.

Alonzo Boone, M.D. Miami Medical College, Cincinnati, 1878; a member of the American Medical Association, died at his home in Englewood, Ohio, August 27, from the effects of gunshot wounds said to have been self-inflicted, while despondent on account of the death of his wife, aged 65.

John M. Brice, M.D. Medical College of the State of South Carolina, Charleston, 1890; a member of the South Carolina Medical Association and Chester County Medical Society, died at his home in Chester, August 20, from typhoid fever, after an illness of six weeks, aged 39.

William R. Edgar, M.D. Detroit College of Medicine, 1881; for a number of years a practitioner of Lyons, Ohio, and at one time a representative in the legislature of Michigan, died at his home in Toledo, August 14, after a long period of invalidism, aged 47.

William M. Rymer, for many years a practitioner of Harrisville, W. Va.; a member of the Little Kanawha and Ohio Valley medical societies and of the Ohio State Medical Association, died suddenly from heart disease, at his home, February 2, aged 75.

Charles W. Sly, M.D. Beaumont Hospital Medical College, St. Louis, 1892; Physio-Medical Institute, Chicago, 1888; a member of the Illinois State and Woodford County medical societies, died suddenly at his home in Benson, Ill., August 16, from heart disease, aged 44.

Carodon Leroy Swartz, M.D. Northwestern Medical College, St. Joseph, Mo., 1891; a member of the Missouri State Medical Association and Andrew County Medical Society; formerly of Rosendale, Mo., died at his home in Arkoe, Mo., August 7, aged 55.

Fred McOmber (Examination, Mich., 1899): a veteran of the Civil War; for ten years postmaster of Berrien Springs, Mich., and for a number of years an editor of that city, died suddenly at his home, August 19, from angina pectoris, aged 61.

John B. Hill, M.D. Medical Department, University of Nashville, Tenn., 1854; one of the oldest practitioners of Davidson County, Tenn., died at his home near Nashville, August 13, from pleuro-pneumonia, after an illness of one week, aged 73.

J. H. Crafford, M.D. Medical College of Virginia, Richmond, 1874; of Lee Hall, Warwick County, Va.; at one time a member of the state legislature, died at Sarah Buxton Hospital, Newport News, Va., August 21, after a brief illness.

Arthur Conrad, M.D. Missouri Medical College, St. Louis, 1880; formerly an officer in the German army; a practitioner of Crete, Neb., for more than 25 years, died at his home, August 19, after an illness of several months.

Julian G. Smith, M.D. University of Pennsylvania, Department of Medicine, Philadelphia, 1857; for more than 30 years a practitioner of Salamanca, N. Y., died at his home in that city, August 20, after a long illness, aged 62.

J. A. Sadler, M.D. University of Tennessee, Medical Department, Nashville, 1859; for about 40 years a practitioner of Sherman, Texas, died at his home in that city, August 21, after an illness of about one year, aged 75.

Carter Wade, M.D. University of Virginia, Department of Medicine, Charlottesville, 1882; for several years coroner of Lynchburg, Va., is reported to have been killed in a railway accident at Wakefield, Mich., August 13.

Adolph Hess, M.D. Jefferson Medical College, Philadelphia, 1893; a well-known Jewish practitioner of Milwaukee, and a leader in the Zionist movement, died at his home, August 20, after an illness of two weeks, aged 42.

Joseph T. Pace, M.D. Ohio Medical University, Columbus, 1878; died at his home in Carlyle, Ill., August 17, after a lingering illness, from injuries received two years before in a fall down an elevator shaft, aged 62.

James Madison Solomon, M.D. College of Physicians and Surgeons in the City of New York, 1872; of Brookline, Mass., died at his summer home in Hull Hill, Mass., August 21, after an illness of five months, aged 54.

Charles H. King, M.D. Bennett College of Eclectic Medicine and Surgery, Chicago, 1886; of Redondo, Cal., died at the Orthopedic and General Hospital, Los Angeles, August 17, from paralysis, after a long illness.

Hiram W. Carter, M.D. Cleveland University of Medicine and Surgery, 1869; died at his home in Cuyahoga Falls, Ohio, August 25, from chronic prostatitis, after an illness of eighteen months, aged 66.

Raleigh Robert Parcher, M.D. Cleveland Homeopathic Medical College, 1904; died at his home in Defiance, Ohio, August 21, from nephritis, after an illness of six months, aged 29.

Marcus A. Wheelock, M.D. St. Louis Eclectic Medical College, 1882; a veteran of the Mexican War, died at his home in Salt Lake City, August 24, after a prolonged illness, aged 84.

Philip B. Cook, M.D. Miami Medical College, Cincinnati, 1867; a veteran of the Civil War and for 22 years a practitioner of Lerayсville, Pa., died at his home, August 13.

Ferdinand Hilbert, M.D. University of Minnesota College of Medicine and Surgery, Minneapolis, 1892; of Albany, Minn., died at his home in that place in March, aged 45.

Samuel Fisher, M.D. College of Physicians and Surgeons, Boston, 1903; a colored practitioner of Norfolk, Va., died at his home in that city, August 19, aged 31.

Hugo L. Patterson, M.D. Medical Department, University of Nashville, Tenn., 1869; died at his home near Elkton, Tenn., July 27.

William H. Bentley (Years of Practice, Ill., 1877); a Confederate veteran, died at his home in Marion, Ill., August 22.

Medical Economics

THIS DEPARTMENT EMBODIES THE SUBJECTS OF ORGANIZATION, CONTRACT PRACTICE, INSURANCE FEES, MEDICAL LEGISLATION, ETC.

Medical Society Postgraduate Work.

In our day every physician of enterprise and progressiveness recognizes the necessity for keeping in touch with medical advance and realizes that for this purpose he needs not only to keep abreast of the reports of medical discoveries in the literature, but also needs, at least at intervals, to come in contact with medical teachers and investigators. The difficulty, of course, is for the busy practitioner to spare the time from his practice, as he must not only consider the actual cost of residence in a large city while his income is reduced to nothing, but must also count on the possibility of losing some of his patients, who consult other physicians in the meantime. The possibility, therefore, of having postgraduate work in connection with the local medical society has suggested itself and has been applied in various places. When properly organized the success of this movement has been marked. Small beginnings often give so much satisfaction that the movement develops in such a way as to lead to the organization of promising postgraduate work.

A typical example of how much can be accomplished by the medical society of a city with a population of scarcely more than 100,000 is to be found in the work of the Scranton (Pa.) Clinical and Pathological Society, which, by admirable organization, though without very much effort, has succeeded in bringing a considerable amount of postgraduate instruction to the physicians of the district, to the eminent satisfaction of its members, yet without entailing any serious sacrifices on them. The movement began about a year and a half ago, when the society invited a well-known New York specialist in nervous diseases to deliver a series of lectures, on successive Saturday evenings of the late spring months, when practice is likely to be less exacting. The society offered to pay him a moderate consultation fee for his journeys and lectures and declared that they would greatly appreciate whatever might be done for them in this line. A special fee of $20 was charged for the course of twenty lectures and altogether over twenty men attended. The lectures were mainly clinical, though sufficient didactic instruction was given to enable even the ordinary practitioner to acquire a working knowledge of diagnostic methods in nervous diseases and to give him hints as to recent advances.

All who participated in this course were so pleased with its practical nature and the benefits derived from it that a double course in clinical medicine relating to heart and pulmonary diseases and the kidneys was planned for the next year and was carried out with, if possible, even greater success. The number in attendance increased, and neighboring towns even ten miles away awakened to the possibility of participation. The district is a crowded one, with small towns every mile or so, and physicians from these towns were stimulated to take part in the course, and, having appreciated how much good was done by it, to spread the good news to others. The consequence is that the Scranton Clinical and Pathological Society is now in a position to take up postgraduate work for its own members and for brother practitioners in good standing in the surrounding district to a degree that has perhaps never before been deemed possible under such circumstances.

The plans of the present season include the services, during the whole month of September, of a trained pathologist, who is to have a laboratory in a private hospital in Scranton, to which the physicians of the district may come at whatever hour they can spare during the day and be given points in the technic of laboratory diagnosis that will be helpful in general practice. For this work the services of an assistant in pathology at Johns Hopkins has been secured. September is a favorable month for physicians because it is not a time of much sickness, and for university teachers because the regular university courses have not yet begun.

The private hospital in Scranton is so conducted that any

physician may send his patients there, retain charge of them himself, and thus study out puzzling ailments with the aid and under the guidance of the instructor in clinical pathology. Arrangements for making the Widal test for staining and recognition of bacteria and for hardening and staining of tissues will be readily available for every physician, and all those who are members of the class will be able to apply some of them at least in their daily work during this time. It is evident that this will do much to enable men to introduce the simpler methods of laboratory diagnosis into their practice in a way which might not be secured even under the more formal circumstances of medical school training. The promise of such a work is, indeed, great and the result will be watched with interest.

The plans for clinical work are even more attractive than those for pathologic and laboratory methods. A specialist in children's diseases from New York City is to give some hints on the feeding of children, and the care of them when suffering from respiratory diseases, especially with relation to the admission of as much air as possible. A series of surgical experts will deliver one lecture apiece with a demonstration on a patient suffering from a form of disease in which he has made special studies. A genitourinary specialist is to detail some of the latest advances in that specialty. Gynecologists are to give some special features of recent advance in that branch of practice. Clinical medicine is to be represented with a series of ten lessons with clinical demonstrations. A specialist in mental diseases is to give important points on the newer phases of psychiatry, dealing especially with the early recognition of mental disease and the institution of treatment that will, so far as possible, serve as a prophylactic against the advance of the affection. A physiologic chemist and a clinical pathologist who have done some specially significant work are to present the elements of their work that are likely to be of service to the general practitioner. Finally, an expert in the use of *x*-rays is to give a series of demonstrations with regard to the use of this agent for diagnostic purposes, as well as some practical points with regard to the installation of such apparatus as may be of the greatest service in ordinary practice.

Among the members of the class there is the feeling that instruction received in this way is likely to be even more beneficial than when taken in a regular postgraduate institution. Absence from home for a month or six weeks involves so much expense that the student physician is likely to try to acquire more than he can really grasp, without appreciating how much of it he may be able to use in his practice. When the instruction is spread out over a year and is taken at the same time that practice continues, its application to the clinical examination of patients is much more clear and the temptation to establish various progressive features of recent medical advance in actual practice is very great. For this reason there is a growing impression that an excellent method of keeping up to date in medicine has been secured and the Scranton Clinical and Pathological Society thinks that it has solved an important problem for physicians in general practice throughout the country.

Pennsylvania County Societies to Meet.

Dr. John B. Donaldson, secretary of the Washington County (Pa.) Medical Society and councilor for the seventh district, has sent out a circular letter announcing the second annual meeting of the secretaries, corresponding and assistant secretaries, of the component county societies of the Pennsylvania State Medical Society, to be held at Reading, September 24. The councilors and general officers of the state society are also expected to be present. A dinner will be given by the state society.

The program includes papers on the following subjects: "What Can a Secretary Do to Get New Members?" J. H. Coffman, Scotland; "The Relation of the Secretary to the Society and to the Profession," A. F. Meyers, Blooming Glen; "The Young Men in the Society and How to Interest Them." H. Z. Frantz, Huntingdon; "The Lazy Secretary and His Effect on the Society," E. W. Buckman, Wilkes-Barre.

What the Physician Is Entitled To.

Dr. George W. Guthrie, Wilkes-Barre, councilor for the Third (Pa.) Councilor District, delivered an address at the July meeting of the Wayne County Medical Society, on the subject of "The Doctor's Duty to Himself." Dr. Guthrie urged the completion of the organization of the local profession, saying: "The local society should admit every educated, intelligent, reputable, legally qualified physician not a sectarian." By membership in the county and state society and the American Medical Association, he said, every doctor gains a consciousness of the power of association. "Attendance at meetings brings about a better feeling, while organization enables physicians to make and to maintain just and equitable fees. The oftener a society meets, the greater will be the interest. The physician owes it to himself to preserve his energy and to retain his faculties; to live as long as other men. He should take frequent vacations, for by working fifty-two Sundays as well as holidays, he lengthens his year to fourteen months, while his work-day is rarely less than sixteen hours. With better feeling, induced by county membership in a local medical society, physicians can work together and one can care for another's practice while the latter is seeking recreation in fishing, hunting or travel."

An Educational Campaign in Ohio.

The August *Ohio State Medical Journal* calls attention to the good work done by the Crawford County Medical Society in educating the public regarding nostrums and frauds in proprietary medicine. At the meeting of the society in July 1,000 copies of the reprint of "The Great American Fraud" articles were ordered for distribution among the physicians of the county. Arrangements were also made to place a substantially bound copy of the book in each school library in the county and to place several copies in each public library, calling attention to the articles through notices in the public press. As the *Journal* well says: "The plan is an excellent one and speaks for the earnestness and diligent attention to important matters on behalf of the Crawford County Medical Society. Other county societies may well put this plan in force. The mission of the state society is a great one, yet its chief purpose consists in the preservation of the union of county societies, in order to insure a central body of large membership, great influence, and power for the benefit, first, of the people, and second, of the medical profession. The state association will be helpless in its efforts without the wide-awake county organizations. The absolute, almost unlimited, power for good which is possible will be realized only when county officers recognize the importance of their work and do it promptly and effectively."

Popular Interest in Medical Legislation.

A recent editorial in the Muncie (Ind.) *Star* discussed, under the heading "When Doctors Agree," the proposition for a law regulating medical licensure, eliminating sectarian questions connected with therapeutics and treatment from the state board examinations. The *Star* says:

> No movement is more notable than that which has been started in the medical profession for the exclusion from the license examinations by state medical boards of therapeutics. The effect of it, if adopted, would be that the several boards of examiners that exist in some states would give place to a single board, which would give to creditable applicants the title of "licensed practitioner of medicine or surgery." No doubt the real danger is from admission to the practice of medicine of uneducated men, who are not acquainted with the details of human construction and the cause and manifestations of disease that are recognized as scientific facts by all educated men.

This editorial is of interest as showing the trend of public opinion on the question of the restriction of medical practice. So long as the public regard the efforts of the educated portion of the profession to elevate the medical standard as simply a "squabble among doctors," or as an effort on the part of a portion of a profession to bar out their less fortunate associates, just so long will the public fail to take any interest in such legislation and just so long will its enforcement be against the current of popular opinion. But as soon as it is recognized that the desired legislation is in the interest of public health and better sanitary conditions, rather than for or against any class or set of men, then the endorsement and support of the press and of the public will be well nigh unanimous.

Book Notices

DIAGNOSTICS OF DISEASES OF CHILDREN. By Le Grand Kerr, M.D., Professor of Diseases of Children in the Brooklyn Postgraduate Medical School. Fully Illustrated. Cloth. Pp. 542. Price, $5.00 net. Philadelphia and London: W. B. Saunders Co., 1907.

This is a work in which are described certain important symptoms occurring both alone and in conjunction with other symptoms, and the various causes which might give rise to them. In such a book there is danger of being superficial and of magnifying the symptom into the disease. This danger the author has avoided. He has described the significance of symptoms without magnifying them into diseases. Throughout, he emphasizes the fact that one must not be satisfied with the condition, but must search diligently for the cause of the condition. The examination of the child and the difficulties of the process are dwelt upon in the first part of the book. Then are taken up important symptoms, such as vomiting, diarrhea, headache, anemia, cough, convulsions, etc., and the manifold causes which might give rise to these symptoms are discussed. Finally, the diagnostic features of certain specific subjects are taken up: typhoid fever, tuberculosis, meningitis, and the contagious diseases, the main diagnostic points being considered. Fourteen pages are devoted to cough, with a consideration of the causes which may produce it; similarly eighteen pages are given to vomiting, thirteen to convulsions and thirty to paralysis.

One expects to see in a work on diagnosis at the present day considerable space devoted to the laboratory side of diagnosis. Such aids are especially important in children, where we have to rely so much on our own examination. In this respect the book is disappointing. There is too little mention of the laboratory part of diagnosis. Thus in typhoid too much stress is laid on the inconstant signs of rose-spots and an enlarged spleen, while no mention is made of the almost constant leucopenia or of the presence of bacilli in the blood. Again, no mention is made of the value of a white count in differentiating between lobar pneumonia and typhoid, or of a lumbar puncture in differentiating between pneumonia and meningitis.

The frequency and obscurity of middle ear trouble is mentioned, but not sufficiently emphasized. We should not put otitis under this heading: "Diseases in Which Pain Is the Early and Prominent Symptom." Pain is so frequently absent in middle ear trouble that this very absence constitutes one of the elements of obscurity in diagnosis. It would have been well also to emphasize in the section on temperature otitis media as a frequent cause of an obscure temperature.

The book is valuable chiefly in its "suggestiveness." The busy practitioner will find in it an excellent, compact description of the many causes which produce symptoms, and thus will be put on the track of a diagnosis which he can then run down in some more elaborate work, giving the pathology, symptomatology and treatment. It is of value to the medical student in teaching him to think of symptoms as superficial, as arising from a great variety of causes and in showing him the necessity of determining what cause has given rise to the symptoms observed in a given case.

MANUAL OF ANATOMY. Systematic and Practical, Including Embryology. By A. M. Buchanan, M.A., M.D., C.M., F.F.P.S., Glas., Professor of Anatomy in Anderson's College, Glasgow. Vol. II. With 363 Illustrations, Mostly Original and in Colors. Buckram. Pp. 1539. Price, $2.75 net. Chicago: W. T. Keener & Co., 1907.

The first volume was devoted to osteology and the anatomy of the upper and lower limbs. The book is well bound in flexible water-proof buckram and so can be used in the dissecting room. The author uses the conventional anatomic nomenclature instead of the more recent Basle terminology. The illustrations of the section on osteology are copious and well labeled. The section on the anatomy of the limbs contains dissecting directions for the student, colored illustrations and numerous cuts. Like most of the anatomic manuals, the directions to the dissector are put in fine print and in a subordinate position, while the conventional descriptive text is given prominence. Practical experience in the dissecting room leads one to believe that the most necessary information for beginners in anatomy is clear and unmistakable directions to guide them in their work. The second volume takes up the anatomy of the perineum, abdomen, thorax, head and neck, nervous system and special sense organs. The cuts showing the anatomy of the male perineum, while small; are clear; that of the triangular ligament being especially graphic. The diagrams showing the descent of the testis and the varieties of tunica vaginalis are also good. Considerable space is devoted to the peritoneum, the development of which is shown by diagrams. In the description of the abdominal and thoracic organs, cuts showing the histologic structure of different organs are interspersed with the gross anatomy. Dissecting directions for the abdomen and peritoneum are elaborate. In the section on the thorax considerable attention is paid to the development and arrangement of the pleura. The cuts showing the minute anatomy of the brain and cord are in part taken from Testu, Hirschfeldt and Leveille and in part from original drawings. The sections on special sense organs are complete, without being unnecessarily minute. The two volumes so far published are, on the whole, worthy of commendation.

MANUAL OF PERSONAL HYGIENE. Proper Living on a Physiologic Basis. By American Authors. Edited by Walter L. Pyle, A.M., M.D., Fellow of the American Academy of Medicine, etc. Third Edition, Revised and Enlarged. Cloth. Pp. 451. Price, $1.50 net. Philadelphia: W. B. Saunders Co., 1907.

Dr. Pyle has had the able assistance of Drs. Charles G. Stockton, Buffalo; George H. Fox, New York; E. Fletcher Ingals, Chicago; B. Alex. Randall, Philadelphia; J. W. Courtney, Boston; G. N. Stewart, Chicago, and D. H. Bergey, Philadelphia, who have written very satisfactory chapters on their special departments. The character of the work is excellent and, in our opinion, it covers just about the right amount of ground. Simplification of language would improve it, for the book is intended for lay readers and in its present form it seems to have been written for the well-educated layman. Others will, we fear, pass it by to take up a work written in more popular style—for, to judge from the introduction, which decries "popular" treatises, the plan of the editor has not been to make the work attractive to the masses. The appendix on accidents and emergencies is excellent, being terse and clear. We consider such a book as this incomplete in the present day without reference to sexual hygiene and the avoidance of venereal disease. Smallpox and typhoid are well discussed, but there could well have been more said of some other transmissible diseases.

MORRIS' HUMAN ANATOMY. A Complete Systematic Treatise by English and American Authors. Edited by Henry Morris, M.A., etc., President of the Royal College of Surgeons of England, and J. P. McMurrich, A.M., Ph.D., Professor of Anatomy, University of Michigan. Illustrated, Partly in Colors. Fourth Edition, Revised and Enlarged. Part I. General Morphogeny, Osteology, Articulations. Cloth. Price, $1.50 net. Part II. The Musculature Organs of Circulation. The Lymphatics. Price, $2.00 net. Part III. The Nervous System. Price, $1.50. Philadelphia: P. Blakiston's Son & Co., 1907.

In bringing out the fourth edition of Morris' anatomy the publishers have taken the opportunity of making it an international treatise by securing the services of a number of American anatomists in the revision and rewriting of certain of the sections. Some of the sections have been entirely rewritten and considerably enlarged. The results of recent investigations have been included so that the work represents the present state of anatomic science. The Basle system of nomenclature or BNA, as it is called, has been adopted, the older English names being added in parentheses where they differ greatly from the new terms. The illustrations are excellent and have been considerably changed by omitting several of the old ones and adding new ones made from specially prepared drawings or taken from other books with due credit. With these changes the new edition must be welcomed as one of the most valuable text-books on this important subject.

GAINING HEALTH IN THE WEST (Colorado, New Mexico, Arizona) Being Impressions of a Layman, Based on Seven Years' Personal Experience with "Climate." By George B. Price. Cloth. Pp. 138. New York: B. W. Huebsch, 1907.

A very sensible little book of practical suggestions for those who go west because of tuberculosis. A layman wrote this book after realizing the need for it in his own quest for health. What to do and what not to do is simply stated, including such points as companions, exercise, employment, camping, the right mental attitude, marital obligations, social life and travel. The author acknowledges the aid of some medical friends in his work.

Medical Education and State Boards of Registration

COMING EXAMINATIONS.

MASSACHUSETTS Board of Registration in Medicine, State House, Boston, September 10-12. Secretary, Dr. Edwin B. Harvey, 159 State House, Boston.

IOWA State Board of Medical Examiners, Capitol Building, Des Moines, September 17-19. Secretary, Dr. Louis A. Thomas, Des Moines.

COLORADO State Board of Medical Examiners, 1723 Tremont St., Denver, October 1. Secretary, Dr. S. D. Van Meter, Denver.

IDAHO State Board of Medical Examiners, Capitol Building, Boise, October 1. Secretary, Dr. W. F. Howard, Pocatello.

MINNESOTA State Board of Medical Examiners, Old Capitol, St. Paul, October 1. Secretary, Dr. W. S. Fullerton, St. Paul.

MONTANA Board of Medical Examiners, The Capitol, Helena, October 1. Secretary, Dr. W. C. Riddell, Helena.

NORTH DAKOTA State Board of Medical Examiners, Grand Forks, October 1-3. Secretary, Dr. H. M. Wheeler, Grand Forks.

NEW YORK State Board of Medical Examiners, Albany, October 1-4. Chief of Examining Division, Charles F. Wheelock, Albany.

INDIAN TERRITORY, Western District Board of Medical Examiners, Muskogee, October 7. Secretary, Dr. M. F. Williams, Muskogee.

UTAH State Board of Medical Examiners, Salt Lake City, October 7-8. Secretary Dr. R. W. Fisher, Salt Lake City.

ARKANSAS State Board of Medical Examiners, State Capitol Building, Little Rock, October 8. Secretary, Dr. F. T. Murphy, Brinkley.

ARKANSAS Homeopathic Board of Medical Examiners, Little Rock, October 8. Secretary, Dr. V. H. Hallman, Hot Springs.

GEORGIA Board of Medical Examiners (Regular), Capitol Building, Atlanta, October 8. Secretary, Dr. E. R. Anthony, Griffin.

MICHIGAN State Board of Registration in Medicine, Lansing, October 8. Secretary, Dr. B. D. Harison, 205 Whitney Building, Detroit.

MISSISSIPPI State Board of Health, Jackson, October 8. Secretary, Dr. J. F. Hunter, Jackson.

WYOMING State Board of Medical Examiners, Laramie, October 9. Secretary, Dr. S. B. Miller, Laramie.

RHODE ISLAND State Board of Health, Room 313, State House, Providence, October 10-11. Secretary, Dr. Gardner T. Swarts, Providence.

DISTRICT OF COLUMBIA Board of Medical Supervisors, Law School of Georgetown University, Washington, October 10-14. Secretary, Dr. Geo. C. Ober, Washington.

GEORGIA Board of Eclectic Medical Examiners, Senate Chamber, Atlanta, about October 15. Secretary, Dr. C. H. Field, Marietta.

INDIANA Board of Medical Registration and Examination, Indianapolis, October 22-24. Secretary, Dr. W. T. Gott, Crawfordsville.

ILLINOIS State Board of Health, Great Northern Hotel, Chicago, October 23-25. Secretary, Dr. J. A. Egan, Springfield.

Illinois June Report.—Dr. J. A. Egan, secretary of the Illinois State Board of Health, reports the written examination held at Chicago, June 19-21, 1907. The number of subjects examined in was 16; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 338, of whom 320 passed and 18 failed. Three candidates took an incomplete examination and two withdrew from the examination. The following colleges were represented:

College.	Year Grad.	Total Num. Ex.
PASSED.		
Northwestern Univ. Med. School	(1907)	92
American Medical Missionary College	(1907)	1
Bennett College of Ecl. Med. and Surg	(1907)	21
Chicago College of Medicine and Surgery	(1907)	24
Coll. of P. & S., Chicago (1, 1900); (1, 1906); (78, 1907)		80
Dearborn Medical College	(1907)	22
Hahnemann Med. Coll., Chicago	(1907)	23
Hering Medical College	(1907)	3
Illinois Medical College	(1907)	4
Jenner Medical College	(1, 1906); (11, 1907)	12
National Medical University	(1, 1906); (4, 1907)	5
Rush Med. Coll. (1, 1897); (1, 1904); (1, 1906); (22, 1907)		25
State Coll. of P. and S., Indianapolis	(1907)	1
University of Louisville	(1907)	1
Hospital Coll. of Med., Louisville	(1901)	1
Barnes Medical College	(1907)	1
Lincoln Medical College	(1907)	1
Ohio Medical University	(1907)	1
Hahnemann Med. Coll., Philadelphia	(1898)	1
McGill University, Quebec	(1907)	1
FAILED.		
Bennett Coll. of Ecl. Med. and Surg	(1907)	3
Chicago Coll. of Med. and Surg	(1907)	4
College of P. and S., Chicago	(1907)	1
Dearborn Medical College	(1907)	1
Hahnemann Medical College	(1907)	1
Hering Medical College	(1907)	1
Jenner Medical College	(1907)	2
Keokuk Medical College	(1895)	1
St. Louis University	(1907)	1
University of Lausanne, Switzerland	1907)	1

Maryland June Report.—Dr. J. McP. Scott, secretary of the Maryland Board of Medical Examiners, reports the written examination held at Baltimore, June 19-21, 1907. The number of subjects examined in was 9; total number of questions asked, 54; percentage required to pass, 75; 122 candidates were examined, of whom 90 passed and 32 failed. The following colleges were represented:

PASSED.

College.	Year of graduation.	Anatomy.	Surgery.	Pathology.	Obstetrics.	Practice.	Chemistry.	Materia medica.	Therapeutics.	Physiology.	Average.
Geo. Washington Univ..	(1906)	93	80	90	8.	82	89	79	87	75	85
Geo. Washington Univ..	(1907)	88	95	66	95	87	78	85	80	60	82
Georgetown University ..	(1905)	75	80	65	75	84	72	85	78	75	77
Georgetown University ..	(1906)	88	98	86	85	87	89	97	93	95	91
Georgetown University ..	(1907)	89	95	87	100	77	79	92	83	65	85
Yale Medical School....	(1906)	79	90	68	90	75	50	82	82	80	77
Johns Hopkins Med. Sch.	(1903)	85	98	87	100	79	98	97	100	91	93
Johns Hopkins Med. Sch.	(1905)	85	95	88	100	75	80	96	94	83	88
Johns Hopkins Med. Sch.	(1907)	83	90	85	90	75	63	86	84	82	82
Johns Hopkins Med. Sch.	(1907)	91	100	83	75	90	78	84	78	68	82
Johns Hopkins Med. Sch.	(1907)	87	95	89	95	82	75	77	93	77	86
Johns Hopkins Med. Sch.	(1907)	81	95	81	85	90	84	87	..	85	75
Johns Hopkins Med. Sch.	(1907)	82	95	83	100	79	86	80	90	82	86
Johns Hopkins Med. Sch.	(1907)	87	95	92	85	91	88	80	87	73	86
Johns Hopkins Med. Sch.	(1907)	94	90	93	100	93	84	80	92	87	90
Johns Hopkins Med. Sch.	(1907)	81	95	87	95	85	92	88	94	90	90
Johns Hopkins Med. Sch.	(1907)	64	98	91	100	90	66	97	76	86	85
Johns Hopkins Med. Sch.	(1907)	81	85	73	95	83	63	88	93	82	83
Johns Hopkins Med. Sch.	(1907)	93	95	97	100	88	98	81	93	87	91
Johns Hopkins Med. Sch.	(1907)	81	85	75	85	85	75	89	82	76	81
Johns Hopkins Med. Sch.	(1907)	92	90	97	85	95	92	78	87	92	90
Johns Hopkins Med. Sch.	(1907)	78	90	86	95	93	89	87	80	69	85
Johns Hopkins Med. Sch.	(1907)	85	85	90	95	85	93	78	95	78	87
Johns Hopkins Med. Sch.	(1907)	75	85	97	90	88	81	75	81	81	84
Johns Hopkins Med. Sch.	(1907)	81	100	73	90	78	66	92	84	90	84
Jonhs Hopkins Med. Sch.	(1907)	92	95	69	80	81	78	88	85	86	84
Johns Hopkins Med. Sch.	(1907)	90	80	96	65	82	96	83	91	86	85
Jonhs Hopkins Med. Sch.	(1907)	90	90	91	95	78	79	85	82	79	84
Johns Hopkins Med. Sch.	(1907)	72	90	84	100	83	83	82	76	70	82
Johns Hopkins Med. Sch.	(1907)	91	95	89	100	84	83	95	88	91	91
University of Maryland.	(1906)	62	90	76	80	77	73	84	93	90	81
University of Maryland.	(1907)	85	90	70	100	72	16	83	84	75	75
University of Maryland.	(1907)	67	95	82	100	78	82	94	93	63	84
University of Maryland.	(1907)	81	95	81	80	75	71	80	94	90	83
University of Maryland.	(1907)	78	85	73	100	79	80	60	82	70	79
University of Maryland.	(1907)	86	80	75	90	82	75	80	85	75	81
University of Maryland.	(1907)	76	95	83	100	80	88	90	92	75	87
University of Maryland.	(1907)	78	85	77	80	71	83	93	84	75	81
University of Maryland.	(1907)	88	95	80	100	82	53	78	85	96	84
University of Maryland.	(1907)	94	90	82	100	75	90	88	67	84	86
University of Maryland.	(1907)	89	90	88	95	89	93	97	92	95	92
University of Maryland.	(1907)	71	90	75	90	84	40	78	87	60	75
University of Maryland.	(1907)	77	85	77	90	75	30	82	84	75	75
University of Maryland.	(1907)	91	90	80	100	87	85	76	75	92	86
University of Maryland.	(1907)	94	100	81	100	82	82	81	93	93	90
University of Maryland.	(1907)	79	85	92	75	80	75	84	92	75	82
University of Maryland.	(1907)	81	85	77	100	81	89	83	89	95	87
University of Maryland.	(1907)	55	85	61	90	75	75	82	87	85	77
University of Maryland.	(1907)	86	85	75	85	76	77	77	87	75	80
University of Maryland.	(1907)	89	90	82	100	67	76	78	90	95	85
University of Maryland.	(1907)	76	90	72	85	80	85	82	81	85	82
University of Maryland.	(1907)	82	98	75	90	69	89	95	75	80	84
University of Maryland.	(1907)	88	95	75	80	87	82	90	80	87	85
University of Maryland.	(1907)	77	98	90	90	86	76	93	87	88	87
University of Maryland.	(1907)	80	85	86	95	75	70	78	75	67	79
University of Maryland.	(1907)	85	95	69	85	83	50	95	93	70	81
University of Maryland.	(1907)	75	90	90	95	76	52	82	75	78	79
Baltimore Medical Coll..	(1906)	72	85	63	75	75	61	94	85	70	76
Baltimore Medical Coll..	(1907)	78	80	79	90	76	77	83	75	75	79
Baltimore Medical Coll..	(1907)	78	85	67	90	56	64	90	82	85	77
Baltimore Medical Coll..	(1907)	88	90	68	80	75	63	72	68	75	75
Baltimore Medical Coll..	(1907)	82	90	86	95	82	81	93	80	96	87
Baltimore Medical Coll..	(1907)	86	95	75	90	79	76	92	85	80	84
Baltimore Medical Coll..	(1907)	85	85	59	95	76	83	82	66	80	79
Baltimore Medical Coll..	(1907)	80	90	81	75	80	75	95	93	86	84
Baltimore Medical Coll..	(1907)	60	90	66	85	75	65	93	90	75	78
Woman's Med. Coll., Balt	(1906)	81	80	75	75	79	75	75	86	70	77
Woman's Med. Coll., Balt	(1907)	91	95	92	90	82	37	86	88	75	82
Woman's Med. Coll., Balt	(1907)	70	90	69	95	83	49	93	88	75	79
Woman's Med. Coll., Balt	(1907)	85	80	79	85	71	76	75	85	82	80
Woman's Med. Coll., Balt	(1907)	85	90	75	90	88	39	87	80	65	78
Coll. of P. and S., Balt..	(1906)	84	95	75	100	87	73	75	85	75	83
Coll. of P. and S., Balt..	(1906)	89	90	75	90	82	47	93	85	72	80
Coll. of P. and S., Balt..	(1907)	78	85	70	85	84	86	77	72	80	80
Coll. of P. and S., Balt..	(1907)	85	85	71	85	84	78	78	88	71	81
Coll. of P. and S., Balt..	(1907)	80	100	82	100	93	85	88	92	76	88
Coll. of P. and S., Balt..	(1907)	83	90	69	100	75	68	81	82	85	81
Coll. of P. and S., Balt..	(1907)	66	90	79	90	77	57	66	93	67	76
Coll. of P. and S., Balt..	(1907)	80	80	67	95	76	60	83	63	80	76
Harvard Medical School.	(1907)	60	85	72	95	81	77	83	78	68	78
Med.-Chirur. Coll., Phila.	(1903)	85	85	44	90	75	57	75	89	75	75
Med.-Chirur. Coll., Phila.	(1907)	80	90	82	95	89	86	92	92	90	88
Univ. of Pennsylvania..	(1907)	64	90	71	85	75	50	75	80	85	75
Univ. of Pennsylvania..	(1907)	82	90	85	85	94	75	80	75	95	85
Univ. of Pennsylvania..	(1907)	86	95	78	90	85	71	80	91	90	85
Univ. of Pennsylvania..	(1907)	89	98	93	95	90	58	87	86	85	87
Univ. of Pennsylvania..	(1907)	88	95	80	90	89	67	82	83	80	84
Univ. of Pennsylvania..	(1907)	85	100	88	95	82	78	93	89	95	89
Jefferson Medical Coll...	(1907)	55	80	65	90	78	42	96	94	75	75
Woman's M. Coll. of Pa.	(1907)	81	75	75	100	86	68	75	92	91	83

FAILED.

Geo. Washington Univ..	(1907)	86	75	65	75	75	58	62	73	76	72
Howard University.....	(1903)	37	75	12	80	36	41	96	81	66	58
Maryland Med. College..	(1905)	27	90	11	75	63	43	92	83	63	61
Maryland Med. College..	(1906)	63	80	31	90	75	40	77	75	85	68
Maryland Med. College..	(1907)	65	75	35	75	69	56	87	70	60	66
Maryland Med. College..	(1907)	76	85	52	75	75	45	77	75	75	71
Maryland Med. College..	(1907)	80	90	32	85	80	20	83	63	54	65
Maryland Med. College..	(1907)	38	75	49	100	68	23	78	64	58	61
Maryland Med. College..	(1907)	8	30	5	80	48	13	68	31	46	37
Baltimore Medical College	(1904)	76	80	60	90	77	31	77	62	65	69
Baltimore Medical College	(1907)	77	80	76	90	70	20	68	80	77	71
Baltimore Medical College	(1907)	70	98	61	90	75	58	62	49	70	70
Baltimore Medical College	(1907)	82	85	..	100	79	77	75	77	80	73
Baltimore Medical College	(1907)	42	85	31	90	64	26	90	92	66	65
Baltimore Medical College	(1907)	52	90	66	75	64	49	58	52	60	63
Baltimore Medical College	(1907)	42	50	32	75	45	48	88	90	50	58
University of Maryland..	(1905)	81	90	76	80	76	75	..	..	92	63
University of Maryland..	(1907)	37	85	68	85	75	50	77	77	80	70
University of Maryland..	(1907)	69	85	55	100	75	37	80	61	60	69
University of Maryland..	(1907)	83	85	70	100	75	75	..	73	60	69
University of Maryland..	(1907)	67	95	48	80	63	39	77	50	85	67
University of Maryland..	(1907)	50	80	45	85	72	79	77	68	60	68
University of Maryland..	(1907)	75	90	35	90	66	62	78	75	85	73
Johns Hopkins Med. Sch.	(1907)	77	90	67	75	85	40	75	53	84	72
Baltimore University....	(1902)	12	60	0	75	16	4	77	53	60	40
Woman's M. Coll., Balt..	(1907)	61	90	50	85	75	47	80	75	75	71
Leonard School of Med..	(1907)	76	85	64	85	75	43	78	62	75	71
Coll. of P. and S., N. Y.	(1907)	92	95	68	65	84	22	75	77	75	73
Jefferson Medical Coll...	(1906)	67	90	46	100	62	49	80	76	80	72
Jefferson Medical Coll...	(1907)	67	80	51	90	79	20	87	85	60	69
Meharry Medical College	(1907)	47	75	12	80	48	13	48	65	65	50
Meharry Medical College	(1907)	60	75	22	80	45	33	42	62	75	55

New Jersey June Report.—Dr. J. W. Bennett, secretary of the State Board of Medical Examiners of New Jersey, reports the written examination held at Trenton, June 18-19, 1907. The number of subjects examined in was 9; total number of questions asked, 135, from which candidate was required to answer 90; percentage required to pass, 75. The total number of candidates examined was 63, of whom 53 passed and 10 failed. One candidate withdrew from the examination. The following colleges were represented:

PASSED. College.	Year Grad.	Per Cent.
Howard University	(1905)	83.5
Georgetown University	(1897)	88.2
Northwestern Univ. Medical School	(1906)	83.
Hahnemann Med. College, Chicago	(1902)	79.1
Kentucky University	(1895)	88.7
College of P. and S., Baltimore	(1906)	77.1
Baltimore Medical College	(1906) 86; (1907), 83 1*	
Maryland Medical College	(1907)	75.8
University of Maryland	(1903)	83.3
Johns Hopkins Medical School	(1906)	77.
Dartmouth Medical College	(1901)	83.4
Long Island College Hospital	(1906)	84.
College of P. and S., New York	(1888) 79.5; (1906)	81.5
Woman's Med. Coll. of Pennsylvania (1907) 82.6, 85.5, 85.7, 86.5, 87.1, 87.6, 88.2.		
University of Pennsylvania (1904) 86.7; (1905) 84.5; (1906) 88; (1907) 79.5, 81.8, 82.8, 83.2, 83.4, 83.5, 84.5, 85.2.		
Hahnemann Med. College, Philadelphia (1898) 83.4; (1901) 82; (1906) 80.3; (1907) 74.4, 81.6, 82.3, 83, 83.5.		
Jefferson Medical College (1906) 78.2, 80.4, 80.5; (1907) 85.5, 82.8, 83.8, 84.8.		
Medico-Chirurgical College, Philadelphia (1906) 84.4; (1907)		79.3
University College of Medicine, Richmond	(1907)	77.4

FAILED.

Chicago Homeo. Med. Coll	(1897)	68.
University of Louisville	(1906)	67.5
Baltimore Medical College	(1904) 62; (1906)	73.8
College of P. and S., Baltimore	(1904)	72.5
University of Pennsylvania	(1867)	73.1
University of Naples, Italy	(1899)†; (1905) 45.2; (1906)	67.5
Royal University of Turin, Italy	(1906)†	

*Percentage not given. †Expelled from examination.

Washington July Report.—Dr. C. W. Sharples, secretary of the Washington State Medical Examining Board, reports the written examination held at Seattle July 2-4, 1907. The number of subjects examined in was 17; total number of questions asked, 100; percentage required to pass, 75, and 70 for those having had ten years' practice. The total number of candidates examined was 123, of whom 97 passed and 26 failed. The following colleges were represented:

PASSED. College.	Year Grad.	Per Cent.
Cooper Medical College	(1896)	85
College of P. and S., Los Angeles	(1905)	87
University of So. California	(1907) 85, 90, 91, 92	
College of P. and S., Chicago (1899) 81; (1902) 77; (1905) 80, 91; (1906) 79, 80, 85; (1907) 90.		
Northwestern Univ. Med. School (1900) 81; (1902) 80; (1905) 92; (1906) 76, 80, 85; (1907) 90.		
American Coll. of Med. and Surg.	(1905)	91
Hahnemann Med. Coll., Chicago (1905) 75, 77, 90; (1907)		79
Rush Medical College.. (1891) 80; (1899) 80; (1901) 81; (1903) 84, 87.		
Harvey Medical College	(1905)	75
University of Iowa	(1906) 83; (1907) 81, 86	
University of Iowa, Homeo. Dept.	(1907)	81
Keokuk Medical College	(1903)	80
University of Kansas	(1906)	90
Louisville Medical College	(1904) 76; (1906)	77
Kentucky School of Medicine	(1902)	76
College of P. and S., Baltimore	(1906)	80
Harvard Medical School	(1901)	83
Detroit Coll. of Medicine	(1907)	80
Univ. of Michigan.. (1891) 72; (1896) 85; (1900) 86; (1905)		83
Hamline University	(1904)	76
University of Minnesota	(1899) 79; (1905) 82	89
Marion-Sims College of Medicine	(1898)	78
St. Louis Coll. of P. and S.	(1892)	75
St. Louis University	(1903) 77; (1907) 79, 80,	92
Kansas City Hahnemann Med. Coll.	(1907)	78
Barnes Medical College	(1907)	75
Washington University, St. Louis .. (1899) 77; (1907) 77, 79,		81
Creighton Med. Coll.	(1907)	84
Syracuse University	(1903)	81
Bellevue Hosp. Med. College	(1884) 81; (1897)	87
Western Reserve University	(1897)	77
Medical College of Ohio	(1904)	89
Pulte Medical College	(1892)	72
Miami Medical College	(1904)	82
Willamette University	(1907)	79
University of Oregon ... (1906) 76, 88; (1907) 79, 82, 83, 86,		92
Jefferson Medical College	(1906)	84
Medico-Chirurgical College, Philadelphia (1902) 83, 91; (1907)		76
University of Pennsylvania	(1882) 74; (1894)	93
University of Virginia	(1905) 82,	84
Wisconsin Coll. of P. and S.	(1903) 75; (1904)†	75
Trinity Medical Coll.	(1900) 82; (1902)†	88
University of Toronto, Ontario	(1905) 93; (1907)	91
Queen's University, Ontario	(1903)	80
University of Naples, Italy	(1897)	70
Nagasaki Medical College, Japan	(1902)	88

FAILED.

California Med. College	(1904) 71; (1906)	56
Gross Medical College	(1902)	70
Chicago Homeo. Med. Coll.	(1883) 52; (1891)	69
Harvey Medical College	(1904)	72
Rush Medical College	(1891)	62
Northwestern Univ. Med. School	(1896)	64
Drake University	(1897)	65
University of Maryland	(1879)	66
Detroit College of Medicine	(1904)	70
Barnes Medical College	(1897)	47
St. Louis College of P. and S.	(1895) 62; (1896)	57
Marion-Sims College of Medicine	(1896)	50
Ensworth Central Medical College	(1906)	65
College of P. and S., Kansas City	(1901)	62
Medical College of Ohio	(1881)	59
Miami Medical College	(1882)	60
Willamette University	(1906)	70
Medico-Chirurgical College, Philadelphia	(1899)	74
Jefferson Medical College	(1905)	70
University of Vermont	(1899)	66
Trinity Medical College, Ontario	(1904)	63
Queen's University, Ontario	(1901)*	
McGill University, Quebec	(1875)	67

*Expelled from examination for dishonesty.

Medicolegal

Requirement in Employment of Physician.

The Supreme Court of Illinois says, on the appeal of Variety Manufacturing Company vs. Landaker, that through a fall of an employé of the company the femur bone of his left leg was broken near his body. He was treated by two physicians, who were in regular practice in the city of Chicago, and who were experienced in the practice of their profession. The ends of the bone would not unite, and some months after the injury the physicians who had charge of the case cut the leg open and fastened the ends of the bone together with wires. The operation was not successful, although not an unusual one, and the man died a few days thereafter. The man's widow, as administratrix, then sued the company for damages. A judgment for $5,000 was rendered in her favor, which is here affirmed. The jury was instructed in the case that a person who is suffering from an injury is only required to use reasonable diligence to employ a physician of ordinary skill and experience to treat him, and that the law regards the injury resulting from the mistakes of the physician, or from the failure of the means employed to effect a cure, as a part of the immediate and direct damages flowing from the original injury. The Supreme Court sees no error in this.

Opinions as to Conditions Being Caused by Injury.

The Supreme Court of Illinois says, in City of Chicago vs. Didier, a personal injury case brought by the latter party, that there is some apparent confusion in the authorities on the question as to whether, in such cases as this, a medical expert may be asked his opinion as to whether the physical conditions of the injured party are the result of the injuries com-

plained of. The defendant contended that the inquiry should be as to whether the injury might have produced the physical conditions, and not whether it did produce them. Expressions will be found in some cases tending to support that view, but the weight of authority in this state, as well as in other jurisdictions, does not support that contention.

The reason given for permitting a properly qualified witness to give his opinion as to what did produce certain results or consequences, and not what might have produced them, is that the fact to be established is, what did cause the conditions found to exist? Where the determination of that question involves scientific knowledge or skill, which is possessed only by those who have given the matter special study, and with which jurors and others engaged in the ordinary avocations of life are unfamiliar, a witness possessing the necessary qualifications may be asked for his opinion as to what did cause the conditions described. Such an opinion is not conclusive, and is subject to be contradicted by other evidence. It is for the jury to determine the weight and value of such opinions, when considered in connection with all the evidence in the case.

Right of Health Officer to Compensation.

The Fourth Appellate Division of the Supreme Court of New York says, in People vs. Hervey Blood and others, that it thinks the claims of Frank G. Sherwood should be allowed, one of which claims was for $250 for services as health officer of the town of Albion for one year and for $20.40 for expenses in attending the annual sanitary conference of health officers at Albany.

The court says that if the board of health did not have the authority to fix the compensation of the health officer for his salary in advance of his rendering the services, or did not in fact fix the same, it might agree with the board of auditors that the claim for services presented should not have been allowed, or at least not allowed in full. But he did not base his claim on the specific services rendered. His claim was founded on the stated compensation fixed by the board of health, and, if he was right, there was no necessity for his keeping an account, or furnishing a detailed statement of services rendered by him. The record before the court showing that the board of health did so fix the compensation, the court is of the opinion that it had the authority to fix the same, and that it acted providently in so doing.

Section 21 of the public health law of New York provides that every local board of health "shall prescribe the duties and powers of the local health officer, who shall be its chief executive officer, and direct him in the performance of his duties, and fix his compensation. In addition to his compensation so fixed, the board of health may allow the reasonable expenses of said health officer in going to, attending and returning from, the annual sanitary conference of health officers, or equivalent meeting, held yearly within the state," etc. It seems quite obvious from this provision, the court says, that it was competent for the local board of health to fix the compensati n of its health officer at a yearly salary as was done in this case, and to allow him his reasonable expenses in addition to the sum so fixed for attending the sanitary conference.

With regard to the contention that the health officer was entitled to no salary for the reason that the local board of health failed to prescribe the duties and powers of the health officer, the court says that it was true that no formal resolutions were adopted prescribing his duties, but it did not follow from this that he performed no services. The statute made him the chief executive officer of the local board of health and he was subject to the direction of the board in the performance of his duties. There was no claim that he was not ready at all times to do what was required of him by the local board of health, or did not in fact discharge the duties imposed on him by law or required of him by the local board. Merely because the board of health failed to prescribe his duties in a formal manner afforded no good reason for withholding his compensation.

Neither was the board of auditors justified in rejecting these claims because it did not agree with the board of health as to his rate of compensation or the value of his services. That question was for the local board of health, and the court can not say, nor was the board of auditors warranted in determining, that the board of health acted improvidently in fixing the compensation as it did.

Power to Compel School Officials to Exclude Unvaccinated Pupils.

The Supreme Court of Pennsylvania had, in Commonwealth vs. Rowe and others, school directors of Waynesboro school district, a case where a writ of mandamus had been awarded to compel the directors to exclude from one of the schools of the district a child who had failed to submit a certificate signed by a physician, setting forth that she had been successfully vaccinated, or that she had previously had smallpox. Such a certificate is required by the twelfth section of the act of June 18, 1895, as a condition of a child's right to be admitted to the public schools. The section reads: "All principals or other persons in charge of schools as aforesaid are hereby required to refuse the admission of any child to the schools under their charge or supervision, except on a certificate signed by a physician, setting forth that such child has been successfully vaccinated, or that it has previously had smallpox."

Two questions were presented to the Supreme Court: (1) Does the twelfth section of the act of June 18, 1895, impose any duty on school directors? (2) Can mandamus issue against them to compel them to exclude a scholar from a public school until such scholar has furnished the certificate called for in the twelfth section of the act? The court decides both in the negative.

The court says that if the duty was imposed on the school directors as such to exclude from one of the public schools under their direction a child not having the certificate required by the foregoing section, the writ of peremptory mandamus was properly issued; but if, in the act invoked, no duty appeared to be imposed on them, the writ should have been denied.

The act of 1895 is "for the more effectual protection of the public health in the several municipalities of this commonwealth." It is composed of 21 sections, but only the eleventh, twelfth, thirteenth, fourteenth and twenty-first relate to schools. By the eleventh section no child belonging to or residing with a family in whose house any person may be suffering from smallpox shall be permitted to attend any public, private, parochial, Sunday or other school, and "all school principals, Sunday school superintendents, or other persons in charge of such schools," are required to exclude from them, for a fixed period, children belonging to or residing with a family living in a house in which any person may be suffering from said disease. By the twelfth section "all principals or other persons in charge of schools as aforesaid" are required to exclude children not presenting the certificate provided for in it. By "all principals or other persons in charge of schools as aforesaid," the legislature meant the principals or other persons in charge of the schools designated in the preceding section, and the twelfth section simply imposes on them an additional duty, which is to exclude from a school in their charge a child coming even from a home in which there may have been no smallpox, unless the proper certificate is produced.

In neither the eleventh nor twelfth section of the act is any reference made to school directors. They are not named in any section of the act. The duty to exclude children from infected homes and those not presenting the certificate of immunity from smallpox is placed on the principals of the schools, or other persons in charge of them. They are the ones specifically designated in the eleventh section, and in the twelfth must be understood as the same persons on whom the duties had been imposed in the eleventh. Their natural meaning must be given to the words "by other persons in charge of schools," and it is that the legislature intended that those having the active charge of them should be charged with the duty of excluding children, and not the directors, who have a supervisory charge of schools.

In the first ten sections, relating to certain duties to be performed in the interest of public health, nothingis left to im-

plication as to who are to perform them, and who shall be responsible for failure to perform them. Coming to the eleventh and twelfth sections, it is not reasonable to hold that, if the legislature intended to impose by them any duties on directors, it would have failed to name these officers.

The child in this case ought to have been excluded from the school. The duty of doing so was imposed on the principal or teacher in charge of the school, and he was not only culpable for neglecting to perform it, but incurred the penalty prescribed by the last section of the act. The directors ought to have seen that their employé having charge of the school obeyed the injunction of the statute, and, if he did not, it would have been proper for them to exclude the child. They had the right to do so before the passage of the act of 1895 (Duffield vs. Williamsport School District, 162 Pa. 467), and since its passage they ought not to have hesitated in seeing that it was observed by the teachers. But that was not the question before the court. The court was simply to determine whether a ministerial duty was imposed on the directors by the act of 1895, which they had neglected to perform. No duty can be there found, and, in the absence of it, there was nothing for the court to command them to do under the petition presented for a writ of mandamus.

Current Medical Literature

AMERICAN.

Titles marked with an asterisk (*) are abstracted below.

Medical Record, New York.

August 24.

1 Landmarks in Pancreatic and Biliary Ducts. B. Robinson, Chicago.
2 *Two Hundred Charity Cases of Pulmonary Tuberculosis Under Sanatorium Treatment at Los Angeles from 1903 to 1907. W. J. Barlow, Los Angeles, Cal.
3 *Local Treatment of Cancer. R. Bell, London.
4 *Perforating Gunshot Wounds of Pleura and Lung. H. Roth, New York.
5 Modern Therapy of Cystitis. M. W. Ware, New York.
6 Tuberculosis of Middle Ear. A. Bardes, New York.
7 *Differential Diagnosis Between Chorea Minor and Tic. W. W. Graves, St. Louis.

2.—Abstracted in THE JOURNAL, June 1, 1907, page 1893.

3. **Local Treatment of Cancer.**—On the supposition that cancer cells differ but little from those in their immediate vicinity, except that they have degenerated and become weaker, and therefore are not so capable as normal cells of resisting the destructive effect of an agent used to demolish them, Bell recommends the use of irritants, not caustic in their effects, which while not strong enough to destroy the vitality of the normal healthy cell, will succeed in killing a diseased one. As a result of some years' experiments he uses an infusion of capsicum pods the strength of which can be easily regulated, preceded by the application of a 2 per cent. solution of cocain, which, he thinks, aids rather than retards the destructive effect on the morbid cell. The strength recommended to begin with is one ounce of pods, broken up and infused in a pint of boiling water and decanted in a few hours. In a few days a crust will have formed, which will separate in a short time, when the condition of the raw surface will indicate whether or not a further application is advisable. So far, the author's good results have been confined to cases of epithelioma.

4. **Gunshot Wounds of the Lung.**—When the bullet penetrates below the sixth intercostal space it perforates the diaphragm and causes injury to the abdominal viscera. When entering higher it is likely to carry spicules of bone. The bullet tract remains sterile. When the pleura is perforated pneumothorax is likely to follow, and if a large bronchus is opened, it is likely to be extensive. With pleuritic adhesions both pneumothorax and hemothorax may be absent. The entrance of air will cause emphysema. Shock, harassing cough, hemoptysis, pain, varying in intensity and occasion, and possibly even referred to the abdomen, and dyspnea are important symptoms. Clothing carried before the bullet is the most dangerous foreign body. Conservative treatment is the best prophylactic against sepsis: Care of the wound entrance and exit, treatment of primary symptoms, avoidance of transportation if possible, and particularly of the examination with probing finger. Immobilization of the chest and the dorsal posture with raised head and absolute rest are important in treatment. Hypodermoclysis may be beneficial and oxygen of value in alleviating dyspnea. The author deprecates thoracotomy, which is advocated by French and Italian surgeons. It is a very desperate recourse, but will sometimes save patients otherwise doomed. Hernia of the lung, if recent, should be replaced at once. When of longer duration it may be ligated, resected and cauterized, or left to slough off if gangrenous.

7. **Diagnosis Between Tic and Chorea Minor.**—With careful observation, Graves says, the diagnosis should be readily made. He gives a tabulation of the distinguishing features of chorea and tic, of which the following are perhaps the most important: Tic does not affect general nutrition; chorea does. Expression and disposition are vivacious in tic; sullen, even stupid, in chorea. The movements in tic are commonly confined to a single part of the body and rarely become general; in chorea, though beginning locally, they usually become general. In tic the movements are invariably confined to synergically associated muscle groups; in chorea, never. Voluntary tic movements are never inco-ordinated; voluntary effort may control or lessen tic movements; it makes choreic movements worse. A tic movement in the beginning was either a purposeful or an imitative movement; a choreic movement is purposeless and not imitative. Tic movements are lessened by voluntary movements, emotional states, and in the presence of others; choreic movements are exaggerated under these circumstances. Marked associative movements are never present in tic, but are always present in chorea. When an inhibited tic movement gives way to the desire to tic, the ensuing movement is accompanied by feelings of satisfaction to the patient; choreic movements are always unpleasant. Tic movements may be imitated, choreic movements not. Tic is a habit which tends to recovery, while chorea minor is a disease which tends to recovery in from two to six months.

New York Medical Journal.

August 24.

8 *Questionable Influence of So-Called Diathetic Condition in Diseases of Throat and Nose in Children. C. G. Kerley, New York.
9 Future of the Proctologist. S. G. Gant, New York.
10 Differential Diagnosis of Imbecility and Dementia Præcox A. R. Diefendorf, New Haven, Conn.
11 Two Forms of Gastroduodenal Dilatation. B. Robinson, Chicago.
12 Absence and Marked Diminution of Hydrochloric Acid of Gastric Contents in Cancer Involving Organs Other Than Stomach. J. Friedenwald and L. J. Rosenthal, Baltimore.
13 The Art of Percussion. J. G. Beardsley, Philadelphia.
14 *Blood Pressure Studies in Typhoid. J. H. Barach, Pittsburg.
15 Police Methods for Sanitary Control of Prostitution. (Continued.) F. Bierhoff, New York.

8. **Diathetic Conditions in Diseases of Throat and Nose.**—Kerley says that in his experience he does not find that any special type of constitution markedly tends toward adenoids or enlarged tonsils. Since these conditions occur among all classes of people, one must look for a factor common to them all. This he finds in the habit of early childhood of sucking the thumb, etc. The vacuum thus produced tends to produce hyperemia and stasis; further, the friction of the soft palate against the posterior pharyngeal wall gives rise to irritation, congestion and hypertrophy of the mucous glands. Colds, again, constitute another common factor, and according to Kerley's observations, excessive sugar eating is a common element in the production of cold. Cane sugar may be toxic to every child if given in sufficiently large amounts. Another factor is the tendency to lymphoid tissue involvement, peculiar to all children.

14. **Blood Pressure in Typhoid.**—Barach summarizes his paper with the following conclusions: 1. Blood pressure falls from the normal after the patient has taken to bed, stays down until convalescence is established, and then returns toward the normal. 2. Typhoid is a disease with blood pressure below 100 (accepting at present the Standard instrument as standard). 3. The blood pressure is governed by factors of its own, and bears no constant ratio to pulse rate or temperature. 4. In diagnosis, blood pressure studies may be of value in differentiating this disease from others, after we know the behavior of other diseases in this respect. In the diagnosis of the com-

plication it has a value. 5. In prognosis, the blood pressure chart is of value; a steadily falling pressure means grave danger; so long as the blood pressure keeps up at a reasonable level, we may feel that there is reserve power to work with. 6. In the treatment of the disease, study of blood pressure will probably be found of the greatest actual value. It may teach us that the way to combat circulatory failure in typhoid is to increase peripheral resistance; or, when to direct our efforts at the heart and when at the blood vessels, when it is well to increase, and when it is well to diminish the amount of fluid in the vessels.

Boston Medical and Surgical Journal.

August 22.

16 *Results of Treatment of Acquired and Congenital Torticollis at Boston Children's Hospital Since 1879. E. H. Bradford and J. W. Sever, Boston.
17 *Search for a Suitable Climate. S. A. Fisk, Denver, Colo.
18 *Study of 750 Fractures of Long Bones of Lower Extremity. L. G. Paul, Boston.
19 *Habit Cure, Mental and Physical. J. W. Achorn, Boston.

16. **Torticollis.**—Bradford and Sever present in this paper their conclusions with regard to the treatment of torticollis as justified by the experience obtained at the Children's Hospital in the last 28 years; the term "torticollis" being confined to those conditions in which the deviation of the head results from a contraction chiefly of the sternal mastoid, and not including conditions arising from spinal caries, inflamed glands, etc. In view of the results of the study of this large number of cases, covering such a long period of time, the writers think that the following conclusions may be stated, namely: (a) That congenital or acquired muscular torticollis may be cured. (b) That an open incision, with complete division of the two heads of origin of the sternocleidomastoid muscle, is all that is necessary, except in unusual cases. (c) That the horizontal incision below the clavicle in the line of the skin cleavage is the best to use, in that it gives adequate room and also gives the best cosmetic results. (d) That plaster-of-Paris is the easiest applied, holds the head in the corrected position, and allows ambulatory treatment, and is, therefore, the best immediate dressing. (e) That the plaster cuirass should be worn not longer than two months. (f) That the Buckminster-Brown brace, Thomas collar, or wire collar should be worn for an average of four months following the removal of the cuirass. (g) That it is best to operate on patients between the ages of 2 and 12 years, to insure a good result, and to prevent permanent bony deformity of the face and head.

17. **Suitable Climate.**—Fisk considers the Colorado climate for young tuberculous persons in detailed comparison with many other parts, and particularly with southern California, and he concludes in favor of the Colorado climate "used properly."

18. **Fractures of Long Bones of the Lower Limb.**—Paul, after an examination of 750 cases of fracture of the long bones of the lower extremities, arrives at the following conclusions: 1. In fractures of the long bones of the leg the proportion of males to females is about 4 to 1. 2. Fractures of the right leg are only slightly more frequent than of the left. 3. Fractures of the femur are proportionately more frequent in children than in adults. 4. High fractures in any of these three bones are rare in children under 10 years of age, but are found in adults past middle age. 5. Fractures in children unite readily, and old age of itself is not a cause of delayed union. 6. The majority of fractures in which union is delayed are of the oblique or comminuted variety. 7. In the great majority of cases, delay in union is due to local causes, such as interposition of muscular tissue between the fragments, or faulty approximation of fragments. 8. Constitutional diseases rarely cause delay in union, but certain fractures, for some unknown reason, fail to unite, although the approximation is accurate and no constitutional disease is present. Practically all who have written on this subject are agreed that local conditions, as interposition of soft parts, imperfect approximation of fragments, imperfect immobilization, etc., will delay or prevent union of fractures, but opinions differ as to what extent constitutional diseases will influence union.

19. **Habit Cure.**—This is a presentment, in a very practical form, of the principle of autosuggestion in the cure of settled morbid conditions, mental or physical. It lays down clearly the principle on which are attained such good results as undoubtedly do occur in many instances under Christian Science. Here is an example: "A man suffering from insomnia will often establish this fact in his anatomy by sitting up regularly after night; or perhaps about sunset he begins to say, 'I can't sleep,' and then keeps on vaccinating himself with this idea until saturated with it. Of course, he knows he can't. He has been telling himself this for ten years, and he lies awake to prove it. Let him begin by saying, 'I shall sleep.' Let him say it 40 times a day—say it until the memory of 'I can't sleep' fails and the affirmation 'I shall sleep' takes its place." The paper abounds in useful aphorisms, for instance: "The person who wills wins; the person who tries presupposes that he is going to fail; the will to do a thing has faith for a companion, while trying to do a thing has failure for a mate." The author sums up as follows: "First comes the resolution to do the thing required, then the memorization of an affirmative expression, because it is constructive and toning; a good substitute for the expression that is negative and destructive. This practice should be kept up till memory takes on the affirmative expression and the negative fades away; and along with this goes concentration of mind and purpose; and finally one should seek any influence known that will assist, such as optimistic friends, reading that elevates, change of scene or thought, exercise or prayer, if one has faith."

Lancet-Clinic, Cincinnati.

August 25.

20 Dangers of Self-Medication. H. V. Sweringen, Fort Wayne.
21 Relationship in Disease Between Stomach, Liver and Intestines. F. L. Rattermann, Cincinnati.
22 Advertisement of Venereal Cures in Public Press. D. R Silver, Sydney, Ohio.

St. Louis Medical Review.

July.

23 *Blood Pressure and Its Relation to Disease. F. W. Froehling, Kansas City, Mo.
24 Is the Induction Machine Commonly Called Static of any Therapeutic Value? H. N. Chapman, St. Louis.
25 *A Little Human Milk. J. Zahorsky, St. Louis.

23. **Blood Pressure.**—Froehling gives a good picture of the present standing of the blood-pressure question, illustrating certain points by personal experience. For instance, he values the use of the sphygmomanometer not only for diagnosis, but for prognosis, in Bright's disease and he has often been able also to make the diagnosis of Bright's disease by means of Sahli's instrument, which he considers to combine the advantages of those of Basch and Riva Rocci, before examining the urine.

25. **A Little Human Milk.**—Zahorsky renews his plea, first made in *Pediatrics*, Vol. II, 1901, for the addition of a little human milk to the dietary of an infant deprived by circumstances of the mother's breast. Human milk can be obtained from the breast by milking, in the case of some woman who has more milk than her own child needs, into a sterilized cup or bottle, and should be treated as ordinary cow's milk, kept on ice, to be used as required. Many conditions, chiefly disorders of nutrition, are named in which the benefit of a little human milk in addition to other food is of value, e. g., severe marasmus, gastroenteric infection, rickets, scurvy, laryngospasm, pneumonia, bronchopneumonia, pertussis, dysentery, the acute exanthemata, in short, in most wasting conditions.

The Physician and Surgeon, Detroit.

April.

26 *Fatal Case of Typhoid. G. Dock, Ann Arbor.
27 Dietetic Treatment of Bright's Disease. G. W. McCaskey, Fort Wayne.
28 The Green Stool. W. H. Birchmore, Brooklyn.

26. **Fatal Case of Typhoid.**—Dock describes a fatal case of typhoid and expresses the opinion that operations for perforation in typhoid fever are still not done so much as they ought to be, and for the simple reason that we are entirely too exacting in our requirements for diagnosis. We wait not merely for perforation symptoms, but for peritonitis symptoms. The point is not to wait until the patient has peritonitis, but the minute it is suspected he has perforation—that the infection is going through the serosa—as shown by pain or change of temperature, or leucocytosis, or rise of blood pressure, or abdominal signs—then the thing to do is what we do with ap-

pendicitis when we meet it early enough—operate at once and do what we can. As to feeding, the trend of opinion is coming around to the belief in fuller feeding. Dock is convinced that if his patient can digest the food and has no bad symptoms, no pain, no tympanites, no undue rise of temperature or pulse, he is likely to get along faster, with less liability to thrombosis and many other complications.

The Laryngoscope, St. Louis.

July.

29 Modern Methods in Repair of Cleft Palate. J. B. Roberts, Philadelphia.
30 Cleft Palate and Hare-Lip. K. W. Baldwin, Philadelphia.
31 Submucous Perineural Injection of Anesthetic Solutions in the Nose. G. Killian, Freiburg, Germany.
32 Problem of Asepsis in Routine Office Work of the Laryngologist. T. Hubbard, Toledo, Ohio.
33 Ocular Diseases of Nasal Origin. J. A. Patterson, Colorado Springs, Colo.
34 *Differential Diagnosis of Tuberculosis and Syphilis of the Upper Respiratory Tract. L. M. Hurd, New York.
35 Anatomic and Surgical Considerations of the Frontal Sinus. H. J. H. Hoeve, Des Moines, Iowa.
36 Cerebellar Abscess Following Acute Suppuration of Middle Ear. W. D. Black, St. Louis.
37 Instrument for Application of Disc to Perforations of Ear Drum. J. W. Wamsley, Philadelphia.

34. Tuberculosis and Syphilis of the Upper Respiratory Tract.—Hurd says that certain phases of syphilis of the mucosa are histologically identical with tuberculosis. A number of giant cells, apparently not differing from those seen in tuberculosis, may be easily demonstrated. Consequently, in an area of chronic inflammatory action in the mucosa crowded more or less with round cells, with or without loss of epithelium and ulceration, the presence of one or more giant cells in every field does not justify an unqualified histologic diagnosis of tuberculosis. The presumptive diagnosis, whatever the clinical history, should be syphilis when a marked vascular thickening and the number of giant cells are out of all proportion to, and more prominent than, the coagulation necrosis, unless the tubercle bacilli can be demonstrated in the tissues.

Journal of the Arkansas Medical Society, Little Rock.

July.

38 Problem of Nutrition in Gastric Atony. F. B. Turck, Chicago.
39 Clinical Diagnosis of Tumors. M. D. Ogden, Little Rock, Ark.
40 *Duties and Relations of Physician and Surgeon. W. A. Snodgrass, Little Rock, Ark.
41 *Preventive Medicine. W. P. Illing, Little Rock, Ark.
42 Medical Legislation. C. R. Shinault, Little Rock, Ark.

40.—Abstracted in THE JOURNAL, June 22, 1907, page 2147.

41.—Abstracted in THE JOURNAL, June 22, 1907, page 2146.

Journal of Biological Chemistry, New York.

January.

43 Poisons of Amanita Phalloides. J. J. Abel and W. W. Ford, Baltimore.
44 The Glyoxylic Acid Reaction for Tryptophan, Indol and Skatol. H. D. Dakin, New York.
45 *Cases of Diabetes Treated with Secretin. N. B. Foster, New York.
46 *Treatment of Case of Diabetes with Secretin. H. D. Dakin and C. C. Ransom, New York.
47 The Chemistry of Flesh. H. S. Grindley and H. S. Woods.
48 Studies in the Chemistry of Ion-proteid Compounds. T. B. Robertson.
49 Action of Certain Vegetable Cathartics on the Isolated Center of a Jelly Fish. J. B. MacCallum.

February.

50 The So-Called Coferment of Lipase. A. S. Loevenhart.
51 Inhibiting Effect of Sodium Fluorid on the Action of Lipase. A. S. Loevenhart and G. Pierce.
52 Effect of Bile on Hydrolysis of Esters by Pancreatic Juice. A. S. Loevenhart and C. G. Souder.
53 Are the Animal Enzymes Concerned in the Hydrolysis of Various Esters Identical? A. S. Loevenhart.
54 Fate of Radium After Its Introduction into the Animal Organism. G. M. Meyer.
55 Quantitative Estimation of Tryptophan in Protein Cleavage Products. P. A. Levene and C. A. Rouiller.
56 Presence of Lactic Acid in the Urine of Pernicious Vomiting of Pregnancy. F. P. Underhill.

March, Vol. II, No. 6.

57 Studies of the Effects of Ions on Catalysis, with Particular Reference to Peptolysis and Tryptolysis. W. N. Berg and W. J. Gies.
58 Composition of Toxicodendrol. S. F. Acree and W. A. Syme.
59 Elimination of Indoxyl Sulphate in Urine of the Insane. J. H. Borden.
60 Kinds of Lactic Acid Produced by Lactic Acid Bacteria. P. G. Heinemann.

March, Vol. III, No. 1.

61 Thymus Nucleic Acid. W. Jones and C. R. Austrian.
62 Excretion of Boric Acid from the Human Body. H. W. Wiley, Washington, D. C.
63 *Creatin as a Brain Stimulant. S. S. Maxwell.
64 Formation of Glycogen in Muscle. R. A. Hatcher and C. G. L. Wolff, New York.
65 Relation of Thyroid to Autolysis. H. G. Wells and R. L. Benson, Chicago.
66 Relation of Extractive to Protein Phosphorus in Aspergillus Niger. W. Koch and H. S. Reed.
67 Relation of Electrolytes to Lecithin and Kephalin. W. Koch.
68 Experiments Bearing on the Mode of Oxidation of Simple Aliphatic Substances in Animal Organism. H. D. Dakin.
69 Reduction of Barium Sulphate in Ordinary Gravimetric Determinations. O. Folin.
70 Occurrence and Formation of Alkyl Ureas and Alkyl Amines. O. Folin.

May.

71 Synthesis of Protein Through the Action of Trypsin. A. E. Taylor.
72 Synthesis of Protein Through the Action of Pepsin. J. B. Robertson.
73 Detection and Estimation of Reducing Sugars. S. R. Benedict.
74 The Heat of Combustion of Vegetable Proteins. F. G. Benedict and T. B. Osborne.
75 Is the Saliva of the Dog Amylolytically Active? L. B. Mendel and F. P. Underhill.
76 Behavior of Uric Acid Toward Animal Extracts and Alkalies. P. H. Mitchell.
77 Manganese, a Normal Element in the Tissues of Fresh Water Clams. H. C. Bradley.
78 Quantitative Estimation of Extractive and Protein Phosphorus. W. Koch.
79 Day and Night Urines. E. Osterberg and C. G. L. Wolf.
80 Ammonia in Milk and Its Development During Proteolysis Under the Influence of Strong Antiseptics. H. C. Sherman, W. N. Berg, L. J. Cohen and W. G. Whitman.
81 Separate Determination of Acetone and Diacetic Acid in Diabetic Urine. O. Folin.

July.

82 Researches on Pyrimidins. H. L. Wheeler and T. B. Johnson.
83 *Relative Efficiency of Various Methods of Administering Saline Purgatives. F. W. Bancroft.
84 Proteins of the Pea. T. B. Osborne and I. F. Harris.
85 Nuclein Ferments of Embryos. W. Jones and C. R. Austrian.

45. Secretin in Diabetes.—The effect of secretin, an acid extract of the duodenal mucous membrane, in stimulating the external pancreatic secretion, having led Spriggs and Moore to the idea that its effect might also be exerted on the internal secretion, and to a consequent trial in diabetes, Foster records the clinical histories of five cases in which this method was used without favorable result, save that in the second case, while the sugar content remains the same, the patient has regained appetite, strength and weight to the extent of five pounds. Four other patients also showed no favorable result, though these are not reported, as the conditions did not leave Foster in absolute control. Foster is unable to confirm the favorable observations of Moore and his associates.

46. Id.—Dakin and Ransom also report a case of diabetes treated with secretin, in which a decrease in sugar accompanied by a diminished urine output continued until, after five weeks, the original sugar excretion was reduced by one-half, but it was not permanent.

63. Creatin as a Brain Stimulant.—Maxwell found that when powdered creatin was applied to the cortex of the motor areas, the results agreed in every essential detail with the tremblings and cramps described years ago by Landois, as following on such application. A saturated solution, however, was much longer in producing the effect, which was also much less marked. Other experiments show that creatin does not excite the peripheral motor nerves, and it is probable that it does not stimulate the white matter of the brain. Its hydroscopic action is not sufficient to cause the contractions, as in the case of cane sugar crystals applied to the brain, and Maxwell, therefore, concludes that substances like creatin probably do not stimulate directly, but bring about secondary chemical changes, to which the excitation is due.

83. Administration of Saline Purgatives.—Bancroft, as the result of a series of careful experiments, summarizes his conclusions as follows: 1. In any experiments dealing with the quantity and character of the feces eliminated, it is absolutely essential that the feces of the experimented animals should be compared with those of the control animals kept at the same time and treated in the same way as the experimented animals, except, of course, that no salts are given them. The need of this precaution is largely responsible for the different results arrived at by Auer and MacCallum. 2. When small doses of mild purgative are given a bulky diet will sometimes largely mask any effect that might be due to the purgative. In such experiments, therefore, a more concentrated diet should be given. 3. The subcutaneous injections of small doses of sodium citrate was found to increase the feces eliminated for the next

three to five hours to twenty-three times the amount eliminated by the controls. 4. The intravenous injection of maximum doses of sodium sulphate was found to increase the feces ten times. 5. The subcutaneous injection of 2 c.c. of barium chlorid was found to increase the feces eliminated for the next two hours fourteen and one-half times. 6. Large subcutaneous or intravenous doses of all three of these salts make the feces eliminated unusually moist. After barium chlorid the feces even become partially fluid. 7. Fluid feces can be more easily obtained with sodium citrate when it is given by mouth because it usually takes more than 100 c.c. of an $\frac{m}{6}$ solution to produce fluid feces, and this amount is almost always fatal when given subcutaneously. 8. With sodium sulphate, fluid feces are more easily obtained when the salt is given by the mouth because : (a) It is but slowly absorbed from the digestive tract, and so is passed down into the cecum which it distends and the contents of which it dilutes. It thus remains in contact with the walls of the digestive tract for a long time and has a chance to affect the mechanism for peristalsis and secretion which are contained in the walls. (b) It is but slowly absorbed from the subcutaneous tissue, and so never reaches the wall of the digestive tract in sufficient concentration to produce its maximum effect. (c) When introduced into the circulation it acts as a diuretic and is thus rapidly eliminated and never reaches the intestines in sufficient concentration and for a long enough time to produce its maximum effect before it has killed the rabbit. 9. With barium chlorid fluid feces are more easily obtained when the salt is given subcutaneously than when it is given by the mouth. 10. In considering the effect of any salt, it should always be borne in mind that the effect may be due to the activity of either anion or cation. Magnesium sulphate acts as a purgative on account of its anion. 11. All these results go to show that MacCallum's conclusions are correct: The mechanism for causing purgation is in the intestinal walls and is stimulated whenever any saline purgative reaches it in sufficient concentration, no matter in what way that purgative may have been introduced into the body.

Louisville Monthly Journ .l of Medicine and Surgery.

August.

86 *Current Treatment of Diseases of the Tear Passages. S. G. Dabney, Louisville.
87 Portal Hypertension. B. Robinson, Chicago.

86. Diseases of the Tear Passages.—Dabney concludes his article as follows: 1. A simple conjunctival wash and pressing out of the tear sac will usually suffice to cure dacryocystitis in the new-born—the time varying from a few weeks to a few months. 2. In chronic dacryocystitis, the nose should be examined and special attention given to the inferior meatus, removing obstruction and reducing inflammation. 3. In mild cases cure, and in severe cases much benefit may often be obtained by syringing with cleansing and astringent agents. 4. Probing is useful as an adjunct to the syringe, but it rarely curative, and if rudely performed may be injurious. 5. In tedious cases, those subject to lachrymal fistula or to recurring acute attacks or to impermeable stricture, extirpation of the tear sac should be advised with the prospect of cure of the suppuration and great improvement in the epiphora.

Journal of the Michigan State Medical Society, Detroit.

August.

88 Uses and Abuses of Proprietary Infant Foods. T. B. Cooley, Detroit.
89 *Treatment of Arthritis by Localized Passive Hyperemia. F. Smithies, Ann Arbor.
90 The Future Hygiene. M. Willson, Port Huron.
91 *The Neurotic Factor in Gastric Troubles. B. R. Corbus, Grand Rapids.
92 *Case of Perforation of Small Intestine, with Operation and Recovery. W. T. S. Gregg, Calumet.

89.—Abstracted in THE JOURNAL, July 13, 1907, page 181.

91. Gastric Troubles.—Corbus has found gastric trouble among the most prominent symptoms in 75 per cent. of neurasthenic cases, and insists on the importance of looking more to the neurotic factor in digestive disorders. It is a frequent starting point of a vicious circle.

92.—Abstracted in THE JOURNAL, July 13, 1907, page 179.

Journal of the Medical Society of New Jersey, Orange.

July.

93 *President's Address, Medical Society of New Jersey. A. Marcy, Jr., Riverton, N. J.
94 *Oration on Surgery, Medical Society of New Jersey. A. Vander Veer, Albany, N. Y.
95 *Oration on Medicine, Medical Society of New Jersey. M. Manges, New York.
96 Significance of Abnormal Stools in Early Life. G. R. Pisek, New York.

August.

97 *Legality of the State Medical Examinations and Reciprocity in Interstate Medical Licensure. E. L. B. Godfrey, Camden, N. J.
98 *Lymphatics. E. Z. Hawkes, Newark, N. J.
99 Plea for More Gentle Wound Manipulation. J. H. Bradshaw, Orange.

93.—Abstracted in THE JOURNAL, July 20, 1907, page 269.

94, 95, 97.—Abstracted in THE JOURNAL, July 20, 1907, page 267.

98. Lymphatics.—Hawks insists on the importance of a thorough knowledge of the lymphatics for correct interpretation and successful treatment of many pathologic processes, and instances the relation of chills and fever to lymphatic and venous absorption respectively, the spread of cancer, etc.

Virginia Medical Semi-Monthly, Richmond.

August 9.

100 *Unclassifiable Fevers. J. Tyson, Philadelphia.
101 Traumas of the Brain. J. S. Horsley, Richmond.
102 Functional Disorders of the Biliary Secretion and Their Treatment. H. Richardson, Baltimore.
103 Report of a Frightful Vesicovaginal Rupture, Menstruation Suspended. R. S. Hill, Montgomery, Ala.
104 Bier's Treatment with Hyperemia. C. R. Robins, Richmond.
105 Treatment of Trifacial Neuralgias. W. S. Wiatt, East St. Louis, Ill.
106 Principles of Surgery. (Continued.) S. McGuire, Richmond.

100. Unclassifiable Fevers.—Tyson reports six cases of anomalous febrile conditions, and discusses their classification, deciding the first to be simple continued fever, notwithstanding its resemblance to typhoid fever, paratyphoid, cerebrospinal and syphilis, respectively. The second may have been a case of influenza, no positive diagnosis could be made, and so on. He reports the cases in support of a plea for the retention of the terms "simple continued fever" and "ephemeral fever," to cover those instances of fever that do not admit of classification under the ordinary divisions.

Annals of Gynecology and Pediatry, Boston.

August.

107 *Buttermilk as a Food for Infants. F. H. Allen, Boston.
108 Atypical Tphoid. E. V. Sullivan, Lawrence, Mass.

107. Buttermilk for Infants.—Allen says that buttermilk has been used more than 100 years as a food for infants in Holland, and even in Germany it has been used with much success for five years, though in America its use is little known. He describes the preparation, composition, indications and contraindications for the use of buttermilk, the method of feeding with it, and the results of following its use. The theoretical objections to buttermilk as a rational food for infants are certainly strong, for a mixture more unlike breast milk it would be hard to imagine, yet the clinical results do not support the theoretical objections in this (as in many other) cases. The buttermilk was tried almost entirely on patients suffering with gastrointestinal disturbance, 127 receiving it during a period of from three to twenty days. Of these, 84 showed marked improvement. It appeared to have some slight favorable effect on the vomiting and in some cases to cause a fall of temperature. A gain of body weight was found in a proportion of cases.

Colorado Medicine, Denver.

July.

109 The Deviated Nasal Septum in Causation of Respiratory Diseases. A. R. Solenberger, Colorado Springs, Colo.
110 *Ocular Headaches. E. W. Stevens, Denver.
111 *Acute Suppurative Otitis Media and Mastoiditis. W. C. Bane, Denver.
112 Hygiene of the Upper Air Passages. C. E. Cooper, Denver.
113 *Importance of Early Recognition and Treatment of Squint. J. M. Foster, Denver.
114 *Consideration of the Principles of Infant Feeding. A. G. Taylor, Grand Junction.

110, 111, 113.—Abstracted in THE JOURNAL, Oct. 20, 1906, page 1321.

114.—Abstracted in THE JOURNAL, Oct. 20, 1906, page 1404.

Texas State Journal of Medicine, Fort Worth.

July.

115 Thirst Cure. J. W. Scott, Houston, Texas.
116 Hydrotherapy. J. M. Frazier, Belton, Texas.

117 Sarcoma of the Long Bones. B. Saunders, Fort Worth.
118 Case of Ovarian Cyst Complicated by Pregnancy. F. D. Thompson, Fort Worth.

The Medical Standard, Chicago.

July.

119 Treatment of Rectal Fistula. C. J. Drueck, Chicago.
120 Résumé of Gastrointestinal Diseases. J. W. Van Derslice, Chicago.
121 How to Administer Chloroform. P. Nichols, Hot Springs, S. Dak.
122 Relation of Sigmoid to Adjacent Viscera. B. Robinson, Chicago.
123 The Disintegration of George Hardin. E. W. and N. H. Buskett, Coffeyville, Kan.

Indiana Medical Journal, Indianapolis.

July.

124 Value of Bismuth Skiagraph Shadow in Clinical Study of Gastroptosis and Enteroptosis. A. B. Graham, Indianapolis.
125 Heart Block. J. A. McDonald, Indianapolis.
126 Treatment of Influenza. S. E. Earp, Indianapolis.
127 *Hyperemia as a Remedy. L. Burckhardt, Indianapolis.
128 Should We Dispense Our Own Medicines? E. R. Beard, Liberty, Ind.

127.—Abstracted in THE JOURNAL, June 22, 1907, page 2145.

Archives of Ophthalmology, New York.

July.

129 Eyeball Injuries by Iron Foreign Bodies. H. Knapp and L. Stoll, New York.
130 An Unusual Form of Hereditary Congenital Cataract. B. Chance, Philadelphia.
131 Double Choked Discs Associated with Compressed Air Disease. L. W. Callan, New York.
132 Venæ Vorticosæ Chorioväginales in Myopic Eyes. J. Van der Hoeve, Leyden.
133 Formation of Permanent Superior Retrotarsal Fold, in Operation for Symblepharon. H. Wolff, Berlin.
134 Bacteriology of Chronic Purulent Inflammation of the Meibomian Glands. A. A. Malakoff, Jr., Moscow.

Central States Medical Monitor, Indianapolis.

July.

135 Blood of the Anemias. G. L. Chapman, Indianapolis.
136 Cataract Operations and After Care. H. C. Parker, Indianapolis.
137 Hardened Chewing Gum Removed from the Right Bronchus with the Aid of the Killian Bronchoscope. J. J. Kyle, Indianapolis.
138 Metabolism. J. Burke, Manitowoc, Wis.
139 The Obstetrical Binder. E. Charles, Summitville, Ind.
140 Treatment of Sciatica. L. E. Cox, Greenwood, Ind.
141 Case of Imperforate Anus. J. A. Gibbons, Mitchell, Ind.

FOREIGN.

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

British Medical Journal, London.

August 10.

1 Progress of the Medical Man. F. Taylor.
2 *Epileptoid Attacks in Tachycardia and Bradycardia. F. H. Clarke.
3 *Bilateral Lesion of the Auditory Cortical Center: Complete Deafness and Aphasia. F. W. Mott.
4 *Prevention of Valvular Disease. R. Caton.
5. Theory and Technic of Orthodiagraphy. P. C. Franze.
6 *Case of Depression of Parietal Bone in New-Born Infant. I. Newton.
7 Malnutrition in Infant Due to Excessive Putrescence in Alimentary Canal, Successfully Treated by Lactic Acid Bacilli. A. Veitch.
8 Case of Intussusception. R. Manwaring-White.

2. **Epileptoid Attacks in Tachycardia and Bradycardia.**—Clarke calls attention to certain nervous conditions, common to tachycardia and bradycardia, which though apparent opposites are very closely allied. The particular point to which he directs attention is the occurrence of severe epileptiform convulsions, with loss of consciousness, which, however, he asserts, are certainly not epileptic, but are sometimes seen in both conditions. In the first case he reported, after the tachycardia a pause of some seconds elapsed; when the interval was short, say four or five seconds, an expression of alarm was noted, and a feeling as if "something were about to happen," was complained of. Intervals of from six to nine seconds caused the face to become pale and the lips livid. There was a scream, the thumbs were drawn inward, the head backward, and there was a convergent squint. In the milder attacks consciousness was not lost, and the patient was able to talk immediately afterward. In lapses of from eight to twelve seconds, consciousness was lost, and convulsive seizures were more severe. Abdominal pulsations, which were marked during the tachycardia, continued after the cessation of the radial pulse. Slight contractions of the heart, probably auricular only, were present during the attack. Intensity of the fit was proportional to the cessation of radial pulse. The return of the pulse cut short the attack, but little disturbance of the general health occurred, even after three years. Three urinary calculi were passed, and occasionally there were rheumatic or gouty symptoms in the small joints. A similar case is also reported. In contrast, the author describes two cases, one of his own and one of Dr. Webster's, of bradycardia, in which similar symptoms took place. He refers to the common statement that Napoleon Bonaparte was an epileptic, which he disputes, asserting that Napoleon was a sufferer from bradycardia, his normal pulse being only 40 a minute, and he regards Napoleon's seizures as being of the same character as those above described, and as due to prolonged cardiac systole. The occurrence of the convulsive seizures was doubtless due to suddenly withheld nutrition of the brain, and that without reference to any sudden change of blood pressure in the cerebral vessels, in support of which Clarke cites Langendorff's experiments in 1878. Detailing recent discoveries of the relation of heart block to the band of His, Clarke suggests that tachycardia is a pure neurosis characterized by a great increase in auricular contractions from disturbed nervous influences. Over-exertion occasions fatigue in the conductivity of the bundle of His, resulting in missed impulses, and delays ventricular contraction causing cerebral anemia and the before mentioned nervous symptoms. In tachycardia, consequently, the prognosis is not bad. Bradycardia, being due to serious structural changes in the bundle of His, is never recovered from, and the chances of sudden death must always be remembered. Rest is the most important treatment. Any deviation from health must be attended to. Clarke's experience with bromids in tachycardia has been bad. Nerve tonics, zinc valerianate or oxid, do good; glycerophosphates or glyceroformates are suggested, but not from experience. Strychnin or nux vomica, atropin belladonna and alcohol are better avoided. In bradycardia, strychnin hypodermically, with digitalis or stropanthus, seems to have been of use. Potassium iodid has led to recovery in a case of Osler's.

3. **Bilateral Lesion of Auditory Cortical Center.**—Mott publishes the sequel of an interesting case, the clinical account of which was published in the *Archives of Neurology*, iii, page 401. There was extensive destruction of the first and second temporal convolutions on both sides, due apparently to emboli from old sclerotic vegetations of the mitral valve, found at autopsy, but not disclosed to repeated examinations during life. The history of the case causes Mott to draw conclusions on two important disputed points: 1. That Marie is right (*Sem. Méd.*, May 23, 1906; reviewed editorially in THE JOURNAL, Aug. 11, 1906, page 436) in stating that the area of cortex destroyed is not a true index to the damage to the brain, and that by assigning functions to areas of cortical destruction, without considering the possibility of the loss of function being due to destruction of subcortical fibers belonging to other regions, we have fallen into a great error. On the other hand, he appeals to this case—the patient's appearance, acts, endeavors to make people understand his wants, desire to help the attendants, cleanliness of habits, comprehension of surroundings, etc.—as contradicting the dictum of Marie, that loss of intelligence is one of the most important characteristics of lesions of the zone of language. 2. The case in point supports Bastian's views that the primary revival of spoken words during thought takes place in the great majority of persons by a subconscious process in the auditory center.

4. **Prevention of Valvular Disease.**—Caton reminds us that in acute rheumatism the inflammatory changes in the joint tissues and the endocardium respectively are like in kind, but the essential treatment of rest is not equally possible of application. The work of the heart varies with times and circumstances, however, so that within limits the amount can be regulated, if we take sufficient trouble. Pain and fever can be lessened by adequate doses of some salicyl compound or other measure appropriate to the condition. Absolute rest of body and mind, light diet, a gentle sedative in sleeplessness, fairly full doses of sodium or potassium iodid three or four times daily, to aid absorption, lessen the volume of the blood and diminish blood pressure. These measures slow the heart

and diminish its amount of work. Secondly, through the first four dorsal nerves, in their distribution between the clavicle and the nipple, the trophic and vasomotor nerves of the heart can be stimulated without exciting the muscle fibers. This is effected by small blisters, applied one by one. The rest treatment is the most important and must continue for six or eight weeks, or even longer, and it must begin early, before marked structural changes occur. This depends on a capacity to recognize the advancing stages of valvular disease in the making. The normal first sound at the apex consists of two elements: 1, The less important muscle sound; 2, the crack of the stretched valve ducts made taut by the sudden high pressure of the blood stream under the powerful squeeze of the ventricle. Thickening and stiffening of the valve membrane from inflammatory change with subendothelial effusion, and the formation of vegetations gradually change the clear sound into a longer and duller one, eventuating in a whiffing sound that ultimately develops into a real regurgitant bruit.

6. **Depression of Parietal Bone.**—Newton describes a case of a new-born child, with a saucer-like depression over the left parietal bone, extending one and a half inches from the coronal suture toward the occipital bone, resembling that often seen in a punctured India rubber ball. On the twelfth day after birth, trephining was performed, a disc of bone reflected as a flap, and a blood clot adherent to the dura mater was removed.

The Lancet, London.

August 10.

9 *General Surgical Anesthesia. F. W. Hewitt.
10 Experimental Researches on Specific Therapeutics. P. Ehrlich.
11 *Bodily Posture and Cardiac Physical Signs. W. Gordon.
12 *Researches into Etiology of Carcinoma. W. F. Robertson and M. C. W. Young.
13 Study of Conditions Producing Anomalous Reaction in Testing Urine for Sugar with Fehling's Solution. (Concluded.) F. W. Pavy.
14 Method of Amputation at the Ankle Joint which Leaves the Heel Intact. C. G. Watson.
15 *Suggestion for Radical Cure of Femoral Hernia. J. S. Pearson.
16 Case of Streptococcic Septicemia. W. G. Sutcliffe and H. W. Bavly.
17 Polydactylism. W. J. Morris.
18 Case of Belladonna Poisoning. H. J. Brewer.
19 *Effects of Borax on Infants. J. C. McWalter.

9. **Anesthesia.**—Hewitt, in his third lecture, states, as a result of personal experience with inhalation of pure nitrogen, that its initial sensations are of the same type as those that characterize the inhalation of the recognized anesthetics, namely, a peculiar, pleasurable, rhythmic, indescribable thrilling or sensory disturbance. This fact, he considers, strongly supports Snow's contention that all volatile narcotics act in the same way by "arresting or limiting those combinations between the oxygen of the arterial blood and the tissues of the body, which are essential to sensation, volition, and to all the animal functions." He also discusses the advantages and disadvantages of the Trendelenburg posture, and particularly states that patients with any pre-existing respiratory affection should not as a rule be placed in the Trendelenburg posture. He reports a case of early syncope under the A. C. E. mixture, and a case, unique in his experience, of intercurrent asphyxia during anesthetization, in a patient in whom excision of the tongue had been previously performed.

11. **Cardiac Physical Signs.**—Gordon sums up his paper as follows: In most cases the change from the erect position to the recumbent: 1. Raises and narrows the normal cardiac dulness. 2. Makes the first heart sound duller and the second sharper, thus producing the classical "lub-dup." 3. Diminishes the anteroposterior diameter of the chest. 4. Markedly narrows the dulness of an enlarged heart. 5. Increases the loudness and the area of audibility of (a) "hematic murmurs" both at the base and apex, (b) mitral and tricuspid regurgitant murmurs, and (c) aortic stenotic murmurs (some of the murmurs may be audible only in the recumbent position). 6. Lessens the loudness and area of audibility of (a) the "venous hum" in the neck, and (b) the presystolic murmur of mitral stenosis (some of these murmurs may only be audible in the erect posture). 7. Leaves unaffected the murmur of aortic regurgitation. 8. Increases the loudness of the accentuated pulmonary second sound. 9. Makes more marked the reduplication of the reduplicated second sound (in some cases the reduplication is only heard in the recumbent position). 10. Causes the partial or complete disappearance of the cardiac dulness in certain cases of cancer in their later stages. Taking all these facts into consideration, Gordon believes that it has been shown that no description of the cardiac physical signs can be regarded as complete which does not include a statement of the position of the patient at the time of the observation.

12. **Etiology of Carcinoma.**—Robertson and Young report an improved ammonio-silver process, with which they have examined specimens of squamous epithelioma and malignant adenoma, in which they find that over extensive areas the nuclei of nearly all the epithelial cells contain several cyanid-fast bodies in single spheres, pairs and short chains. These are certainly not normal structures, and probably not degeneration products. Numerous facts support the view that they are stages of a special protozoan organism.

15. **Femoral Hernia.**—Pearson twists the isolated sac, transfixing and tying it with No. 4 silk, leaving the two ends of the silk long. Both ends are threaded with curved needles, and one end is passed twice through Poupart's ligament and then out through Gimbernat's ligament. The other end is buried deep in the pectineus, and also brought out through Gimbernat's ligament. The ends are then tightly tied and the tied sac acts as a thick plug at the weakest point, securely closing the opening.

19. **Borax Poisoning.**—As bearing on the use of borax as a food preservative, McWalter reports the case of an infant two months old, born strong and healthy, which developed thrush a fortnight after birth. A mixture of borax and honey was applied, which relieved the thrush, but the child developed a liking for it, so that from two to three 4-dram boxes were used every week. The author describing the effects says that a progressive wasting had set in, and when he saw the infant there was a marked erythematous eruption on the palmar aspect of the hands and on the plantar aspect of the feet, with distinct desquamation between the toes and the fingers; well-marked urticarial eruption was present on the arms and forearms, but the region between the legs was notably free from eruption. There were tumefaction and tenderness of the abdomen, and a raw, pinky redness of the lips, tongue, palate and throat, with vomiting and looseness of the bowels. The face had a wizened look, the skin was soft and brownish, the eyes were bright, and the joints, especially the knees, tender, swollen and somewhat stiff. There was no evidence of syphilis or other cause for the wasting and rash except the borax, of which the child had about 10 grains every day for six weeks. On stopping the borax and confining the infant to breast milk, together with a little raw beef juice, it appears to be recovering rapidly.

The Practitioner, London.

August.

20 *Recent Research Work on Cancer. S. M. Copeman.
21 Spread of Cancer in the Upper Lip and Its Influence on Treatment. G. L. Cheatle.
22 *Diagnosis of Addison's Disease. O. Grünbaum.
23 Backward Displacements of Uterus. G. B. Smith.
24 Movable Spleen. T. G. Moorhead.
25 Two Cases of Leprosy Affecting the Eyes. A. W. Ormond.
26 *Inquiry into the Cause of Seasickness. K. F. Lund.
27 Hernia. H. M. Rigby.
28 Abdominal Surgery. H. Upcott.
29 Treatment of Ulcers. B. C. Stevens.
30 Dental Surgery. J. G. Turner.

20. **Cancer.**—Copeman's conclusions summarized are: Cancer is to some extent preventable; it is not in the ordinary sense an infection; it is a local manifestation of perverted faulty metabolism. In spite of temporary amelioration of symptoms, in some instances, with or without retardation of growth, early and complete operative measures afford the only satisfactory treatment. It occasionally disappears spontaneously. Further research into the conditions favorable to such spontaneous cure may ultimately lead to a specific treatment.

22. **Addison's Disease.**—Grünbaum, considering that in many apparently typical cases of Addison's disease in which the suprarenal glands have been proved to be healthy and their extract physiologically potent, disease of the solar plexus can be demonstrated, is led to the conclusion that the internal secretion of the medulla of the suprarenal may act by stimulating the sympathetic system. He discusses in detail the

pathognomonic signs, pigmentation, asthenia, vascular conditions and the blood. He takes the blood pressure at least three times in all suspected cases, and if it is found low, administers suprarenal extract by the mouth, 3 grains, three times a day, for three days. If there is a rise of more than 10 per cent. in the pressure, the probability that the patient suffers from adrenal insufficiency approaches a certainty. In regard to the blood, the opsonic index of the serum for the tubercle bacillus may be taken, as tuberculosis is the commonest cause of the destruction of the capsule.

26. **Seasickness.**—Lund affirms the unanimity of opinion as to the central origin of seasickness, and with regard to the diversity of opinion as to the origin of the stimulus concludes: (a) Strictly speaking, the vomiting is not due to the unusual impression of vision, as it occurs in some people on land; it occurs even when the eyes are closed, and the blind suffer as much as, if not more than, sighted people. (b) It is not due to smell. Any bad or unpleasant odor may cause vomiting. This cause is common to people on land or sea; in fact, to any or all, including deaf mutes, who have sensitive nasal organs. (c) It is not due to momentary displacement of viscera which seems to occur in swinging, or in descending in a lift. The sensation is present whether the eyes are open or closed, but it does not occur in deaf mutes. (d) There is some mechanism in the auditory organ, possibly the system of semicircular canals, which is directly affected by the oscillations of a vessel at sea, and which acts as a stimulus to the vomiting center. [The suggestion that seasickness is due to the disturbance of the perilymph of the semicircular canals was made by J. A. Irwin, The Pathology of Seasickness, *Lancet*, 1881, ii, p. 907.—ED.]

Journal of Tropical Medicine and Hygiene, London.

August 1.

31 *Description of Diplococcus Found in the Lesions of Severe Chronic Pemphigoid Disease of West Africa. F. C. Wellman.
32 Palliative Treatment of Elephantiasis. A. Castellani.
33 Plague. W. J. Simpson.

31. **New Diplococcus.**—Wellman has isolated from the vesicles of a peculiar severe pemphigoid disease in West Africa a diplococcus differing as to pathologic effect from the organism described by Clegg and Wherry, and Almquist, and culturally and morphologically from those isolated from pemphigus by Matznauer and Leiner, for which he proposes the name *Micrococcus dermolyticus, sp. nov.*

Australasian Medical Gazette, Sydney.

June 20.

34 Insanity in Every-Day Practice. S. H. R. Montgomery.
35 *Peripheral Neuritis Due to Lead Poisoning in Children. J. M. Gill.
36 Intubation and Tracheotomy. J. K. Couch.
37 Fever in Pulmonary Tuberculosis. F. C. Griffiths.
38 Incontinence of Urine Cured by Ventrofixation of Uterus. W. T. Chenhall.
39 Two Ruptured Tubal Pregnancies in Same Patient Within a a Year. Æ. J. McDonnell.
40 Two Postmortem Abnormalities. N. A. W. Conolly.
41 Case of Multiple Myomectomy. F. J. T. Sawkins.
42 Fracture of Anterior Fossæ of Skull. H. E. Pridham.

35. **Lead Poisoning in Children.**—Gill reports three cases, and says that the symptoms of lead poisoning in children in some respects differ from those in adults. He cites as characteristic symptoms extreme tenderness on pressure over the affected nerve; that the lower extremity is much more affected than the upper; that the blue line on the gums may be absent if the teeth are clean and free from tartar, and that permanent damage to the brain may result, the acute stage being sometimes accompanied by severe convulsions.

British Journal of Children's Diseases, London.

July.

43 Treatment of Common Tuberculous Affections in Children. C. R. Keyser.
44 *Peculiar Outbreak of Erythema Nodosum. W. L. Symes.
45 Cases of Congenital Anomalies in Children. J. Allan.
46 Thrush and Its Severer Effects. J. G. Sharp.

44. **Erythema Nodosum.**—Symes reports in brief 13 cases, 12 of which occurred in one of the homes for children with which he is connected. He emphasizes the following points: 1, It may become a serious and dangerous disorder; 2, it is sometimes epidemic; 3, it appears to be infective; 4, endocarditis may arise during its course; 5, it may quickly be followed by meningitis.

Presse Médicale, Paris.

47 (Nos. 48-55.) *Penetration of the Intact Skin by the Tubercle Bacillus. (Penetration du bacille tuberculeux par la peau intacte.) V. Babes.
48 *Time of Leaving Bed After Normal Labor. (Etude sur lever précoce après l'accouchement physiologique.) L. Bouchacourt.
49 *The Liver in Heart Disease. (Recherches sur foie cardiaque.) A. Bauer.
50 Cardiac Reflex of Abrams. (Reflexe Cardiaque.) J. Heitz.
51 Latero-lateral Anastomosis in Intestinal Surgery. (L'anastomose latero-laterale en chirurgie intestinale.) E. Bougon and P. Derocque.
52 Thiosinamin in Deafness. (Traitement de la surdite.) M. Lermoyez and G. Mahu.
53 *Lime and the Arteries. (Lachaux et les Artères.) M. Loeper and P. Boveri.
54 *Nature of Malignant Tumors. (Tumeures malignes.) L. Hallion.
55 Diagnosis of Buccal Leucokeratoses. M. Ferrand.
56 *Conclusions on Length of Stay in Bed After Delivery. (La question de séjuer au lit des accouchées.) L. Bouchacourt.
57 *Hyperglycemia and Hyperglycystia in Diabetics. (Hyperglycémie et hyperglycistie chez les diabetiques.) M. Labbé.
58 Reaction of Eye to Tuberculin in Pulmonary Tuberculosis. Sa valur séméiologique dans la tuberculose pulmonaire.) M. Letulle.
59 Prognosis of Surgical Intervention in Spina Bifida. P. Lecene.
60 *Functional Relations of Stomach with Other Digestive Organs. (Rapports fonctionnels de l'estomac avec les autres organes digestifs.) A. Frouin.
61 Clinical Form and Diagnosis of Sporotrichosis. Monier-Vinard.
62 *Ethereal Sulphates in Urine in Intoxication of Gastrointestinal Origin. (Les sulfo-éthers urinaires dans l'intoxication d'origine gastro-intestinale.) R. Brunon and M. Guerbet.
63 Hypnotics with Alcohol Radicals. (Les Hypnotiques à Radicaux alcoholiques.) A. Martinet.

47. **Penetration of Skin by Tubercle Bacilli.**—Babes has experimented by rubbing the cultures from tubercle bacilli into the skin of guinea-pigs. In some cases the hair was simply cut away; in others the skin was shaved. The bacilli penetrated the shaved skin with readiness, and in some cases were able also to penetrate the skin when the hair had merely been cut off. The author regards it as probable that tuberculosis may be acquired through patches of diseased skin, although in his experiments there was no evidence of any disease of the skin at the point where the bacilli had entered.

48. **Early Rising After Normal Labor.**—Bouchacourt reviews the opinion expressed with regard to the disadvantages and advantages of the puerperal woman leaving the bed early after a normal labor. The dangers which are encountered by this practice are divided into first, the danger of infection; this the author concludes is due not to leaving the bed, but to neglect of aseptic precautions. Second, danger of arrest of the involution of the uterus. Involution appears, according to various authors, to be actually more rapid after leaving the bed, and to have been completed to a sufficient degree by the ninth to the twelfth day after delivery. Third, danger of uterine displacement. Here again he cites various authors to show that there is less danger of displacement by the movements of rising than by keeping the horizontal position. Fourth, danger of embolism. There is no question that sudden movements may cause the detachment of a clot closing a uterine vessel, and thus provoke hemorrhage or embolism. However, Küstner insists on the fact that in the course of his experimental researches he has not observed a single case of embolism. Fifth, danger of ptosis. This is undoubtedly real, and the authors who recommend leaving the bed early insist on the necessity of applying a proper abdominal bandage. Among the advantages attributed to a short stay in bed are, first, a favorable influence on the digestive function; second, favorable influence on the circulation and urinary function, and third, promotion of the secretion of milk. (See also abstract No. 56.)

49. **Liver in Heart Disease.**—Bauer refers the changes in the liver in consequence of cardiac disease to the dilatation of the capillaries connected with the hepatic vein, and shows by experiments that the typical picture of the cardiac liver can be reproduced by tying the inferior vena cava in the thorax and immediately after opening the abdomen and tying the portal vein, allowing the animal to die under the anesthetic. In these conditions the capillaries are found greatly dilated, the liver tissue compressed, the cells generally flattened but sometimes globular, containing neither pigment nor fatty globules.

Bauer does not deny that changes may take place in the liver cells in the course of cardiac disease, and influence, to some extent, the resulting lesion. But, in his opinion, the dilatation of the hepatic capillaries is the principal cause of the changes found.

53. **Lime and the Arteries.**—Loeper and Boveri hold that the bones are the natural outlet for an excess of calcium in the body fluids. As the organism grows older this outlet is limited, and the tendency to deposition in the walls of the arteries is increased. Animals whose tissue fluids are saturated with calcium salts are especially susceptible to the action of poisons affecting the vessels, and such poisons, especially adrenalin, they state, cause the deposition of the calcium in the arterial walls if the blood is rich in calcium salts. Comparative experiments with rabbits fed on food rich in calcium salts, such as cabbage, showed that they acquired calcification of the arteries much sooner than did control animals fed on potatoes or other food poor in lime. Artificial calcification of the arteries can not be induced in pregnant females because the excess of calcium is transferred to the fetus. The excess of calcium salts can not be said to cause calcification, but predisposes to it.

54. **Nature of Malignant Tumors.**—Hallion criticises the theory of Dungern and Werner that cancer can be caused by an exaggeration or combination of irritants, and regards it as insufficient, because the almost infinite difference between the slight proliferation caused by simple irritation, and the progressive changes characteristic of malignant growths, indicates a similar difference in cause. Hallion adheres to his theory of a sort of fecundation of one cell by another.

56. **Conduct of the Puerperium.**—Bouchacourt concludes that the woman should be permitted considerable freedom of movement during her stay in bed, and should not be restricted to the dorsal decubitus position. Gymnastics or passive movements are advised by some authors. The length of stay in bed should be suited to the character and social station of the patient, and the gravity of the case. From one week to two weeks is sufficient in normal cases. The patient, after leaving bed at first, should rest on the couch, but may soon be allowed to walk about the room, and may go out, preferably in a carriage, at the end of three weeks.

57. **Hyperglycemia and Hyperglycystia.**—Labbé thinks that not enough emphasis has been placed on the saturation of the blood and tissues of diabetics with glucose as the cause of the symptoms exhibited. He divides diabetics into two classes: 1. Those in whom the origin of glycosuria is exclusively alimentary and, 2, those who form glucose from the albumin and fat ingested, or even from their tissues. In the first class there is a defect in the ability of the organism to burn sugar, and it accumulates in the tissues and in the blood. An excess of sugar in the tissues is termed hyperglycystia, and the excess in the blood hyperglycemia. Diabetics differ in their power to oxidize glucose, and the retention in the tissues begins when the amount of carbohydrates ingested is greater than that which they are able to oxidize. The accumulation of glucose in the tissues does not immediately produce any symptom, but when a maximum is reached, its excretion by the kidneys begins showing glycosuria. The necessity for an increase of fluids results in polydypsia and polyuria. The nervous symptoms follow in consequence of the saturation of the tissue fluids with glucose. The retention of glucose in the tissues explains the fact that glycosuria does not immediately follow the ingestion of an amount of carbohydrates above the degree of tolerance. On the other hand, the fact that glycosuria still continues after the reduction of the amount ingested below that which can be tolerated, is explained by the gradual excretion of the glucose, which had accumulated in the system. Sometimes this excretion is so slow that glycosuria continues for an indefinite period, but is finally removed by absolute avoidance of carbohydrates. Labbé says that it is not necessary, therefore, to conclude that the excretion of a small amount of sugar after carbohydrates have been entirely excluded from the diet indicates that sugar is formed from fat or albumin. He has calculated that the organism of a diabetic weighing 60 kilograms (132 pounds) may contain in the body fluid, the liver and the muscles a quantity of carbohydrates in the form of glucose and glycosin equal to 678 grams (22.6 ounces). The ability of the organism to deposit glucose in the form of glycogen may modify the effects of the ingestion of an excess of carbohydrates. Experiments made by von Noorden have shown relative poverty in glycogen in the liver and muscles of diabetics. The author suggests the possibility that glucose is retained in a form of carbohydrate differing from glucose and from glycogen. The treatment of these conditions is at present exclusively dietetic.

60. **Relation of Stomach to Other Organs.**—Frouin reports some interesting results of the removal of the stomach with the view to determining whether the stomach is essential to life or exerts any influence on other organs by internal secretion. He removed the stomach completely from dogs and succeeded in keeping them alive for months and in one instance for five years. Although the animals continued to live, it was possible to demonstrate certain changes which show that the function of the stomach is not simply to serve as a reservoir for the food. In these dogs from which the stomach had been removed, for from three months to five years, there was a notable distension of the abdomen. At the autopsies more or less intense congestion of the liver was found, and sometimes a hypertrophy of this organ. In the animal which lived five years there were numerous small cysts in the kidneys and an abscess in the cortical portion. Frouin attributes these changes to the removal of the stomach. In normal animals it is possible to recover pepsin from the various organs, but in animals from which the stomach has been removed no pepsin can be found in the organs. It has been shown that the ferment is produced in the stomach and absorbed from it into the blood. Frouin believes that this ferment is useful in the intracellular fermentations, and that the metabolism will suffer to a greater or less extent when the organ is removed. He reviews the production and action of secretin, and explains that while the acid secretions of the stomach are active in producing secretin, there are other substances which have a similar action; for instance, soaps. Fleig has found that alcohol produces secretin, consequently when the stomach is removed the pancreatic and other digestive secretions are stimulated in such a way as to replace the digestive action of the stomach.

62. **Ethereal Sulphates in Gastrointestinal Putrefaction.**—The conclusions of Brunon and Guerbet are: 1. The coefficient of intestinal fermentation is the relation of the ethereal sulphates of the urine to 100 parts of total urinary nitrogen estimated in SO_3. 2. As a result of experiments made by one of the authors on healthy individuals, this coefficient is often less than 1, and never passes 1.4. Diets such as milk, vegetarian, mixed or meat, do not affect this result. 3. On the other hand, in patients in whom one suspects hepatic or renal insufficiency (except in the case of uremia, in which it tends to be depressed), this coefficient may serve to measure the degree of alimentary intoxication. It exceeds 1.4 and may reach a very high figure. In their observations this elevation of the coefficient almost always coincided with a slight albuminuria. 4. The diet has a very marked effect on the coefficient; the vegetarian or milk diet associated with absorption of lactic acid ferments lowers it. 5. Clinical improvement has always been observed in these cases. 6. The determination of the coefficient of intestinal fermentation is a simple clinical procedure. This coefficient is capable of giving the physician useful practical indications for diagnosis, prognosis and dietetic treatment.

Münchener medizinische Wochenschrift.

64 (LIV, Nos. 24-25.) Typhoid and Colon Sepsis; Typhoid as Endotoxic Disease. (Typhus als Endotoxinkrankheit.) E. Stadelmann and A. Wolff-Eisner.

65 *Cerebrospinal Syphilis. (Lues cerebrospinalis.) Tiedemann and Nambu.

66 Differential Diagnosis of Pathogenic Streptococci. W. H. Schultze.

67 *Radical Operation in Enormous Inguinal Hernias. (Uebergrosse Leistenhernien.) Sauerbruch.

68 *Transplantation of Goiter and Experimental Exophthalmic Goiter. (Kropfverpflanzung.) C. Pfeiffer.

69 A Diagnostic Symptom of Appendicitis. M. Blumberg.

70 *Atypical Epithelial Growth and Carcinoma. (Epithelwucherungen.) H. Stahr.

71 Green Stools in Nurslings. (Grüner Stühle beim Säugling.) A. F. Hecht.

72 *Intraureteral Method for Causing Expulsion of Impacted Ureteral Calculi per vias naturales. (Lösung eingeklemmter Harnleitersteine und ihrer Herausbeförderung.) R. Jahr.
73 *Laughter Induced by Examination of Eye. (Lachen vom Auge ausgelöst.) O. Neustätter.
74 *Argyroid Coloration of Hair. (Argentoide Haarverfärbung.) W. Ipsen.
75 Haines' Test for Sugar in the Urine. (Hainesschen Lösung.) R. Schwarz.
76 *Test for Pentose in Urine. E. Kraft.
77 *Removal of Placenta. (Nachgeburtsoperationen.) H. Sellheim.
78 Pharmacology of Oxybenzyltannin. (Pharmakologische Verhalten.) H. Hildebrandt.
79 Practical Experiences with Oxybenzyltannin. (Praktische Erfahrungen.) O. Baumgarten.
80 *Relations of Medulla Oblongata to Pupil. L. Bach.
81 *Massage by Rhythmic Pressure After Intra-abdominal Operations. (Rhythmischen Druck.) G. B. Schmidt.
82 Congenital Functional Defects in Cranial Motor Nerves. (Funktionsdefekte der motorischen Hirnnerven.) R. Neurath.
83 *Scopolamin Narcosis in Obstetrics and Influence of Drug on Child. Skopolamindämmerschlaf in d. Geburtshilfe.) E. Holzbach.
84 *Mesenteric Lymph Glands in Treatment of Sclerodermia. (Mesenterialdrüsen.) Schwerdt.
85 *Hereditary Transmission of Squint. (Schielens.) v. Sicherer.
86 Case of Cerebral Fat Embolism Associated with Tetanus. (Zerebraler Fettembolie, kombiniert mit Tetanus.) Jähne and Schmidt.
87 *New Saccharometer in Testing Urine for Sugar. (Gährungsröhrchen.) O. Schumm.
88 *New Gastric Sound for Roentgenization of Stomach. (Magensonde für Röntgenzwecke.) W. Gross.
89 Does Lumbar Injection of Stovain Influence Motor Functions of Intestines? (Beeinflusst Stovain die motorischen Funktionen der Eigenweide?) M. Penkert.
90 Etiology of Cancers and Tumors in General. (Krebses u. Geshwülste im allgemeinen.) H. Spude.
91 Typhoid and Colon Sepsis Typhoid as Endotoxin Disease. E. Stadelmann and A. Wolff-Eisner.
92 *Diphtheritic Phlegmons of Skin. (Hautphlegmone.) O. Ehrhardt.
94 *Sauerbruch's Pneumatic Cabinet. (Druckdifferenzverfahren.) W. Kausch.
95 Phosphaturia in Gonorrhea. M. Oppenheim.
96 *Therapeutic Use of Human Gastric Juice. (Menschlichen Magensaftes.) E. Rosenberg.
97 Favoring Healing. (Heilungsvorgänge beschleunigen.) Helle.
98 Treatment of Antrum of Highmore in Chronic Sinusitis. (Kieferhöhle bei chronischer Sinusitis.) F. Kretschmann.
99 *Angina at End of Pregnancy, Followed by Fatal Streptococcus Septicemia During Puerperium. (tödlicher Streptokokkensepsis.) H. Merkel.
100 Intralobular Serous Pleurisy. Seufferheld.
101 Fatal Mercurial Poisoning. (Quecksilberintoxikation.) J. F. v. Crippa and F. Feichtinger.
102 *Aseptic Catheterization by Means of Special Apparatus. (Katheterizator.) H. Markus.
103 Urinalysis by General Practitioner. (Harnuntersuchungen in der Praxis.) H. Engel.
104 Artificial Hyperemia in Frostbite. (Künstliche Hyperämie.) C. Mirtl.

65. **Cerebrospinal Syphilis.**—Tiedemann and Nambu report a case which they diagnosticated as one of cerebrospinal syphilis on the ground of a syphilitic history, and which showed temporary marked improvement under antisyphilitic treatment. The symptoms consisted in gradual atrophic paralysis of the extremities, with increased reflexes, disturbances of the bladder and rectum, shooting pains, and tenderness of the muscles and nerve trunks, with which an extreme hyperesthesia of the skin was associated at the end of the disease. Besides this, there were marked ataxia of the arms and legs, and occasional attacks of obstinate vomiting, closely resembling the gastric crises of tabetics. The appearance of gastric disturbances in cerebrospinal syphilis, the authors have never found recorded. The pathologic appearances consisted of inflammation of the meninges, thickening of the walls of the vessels and some softening of the nerve tissue. In the spinal cord there were degenerations of the posterior columns of the cervical lumbar cord. The authors regard the changes as due to a syphilitic process. The *Spirochæta pallida* could not be found. This is of little consequence, they state, considering the age of the syphilitic affection, though no micro-organisms were contained in the meninges.

67. **Radical Operation in Enormous Inguinal Hernias.**—Sauerbruch maintains that hernias of unusually large size may be operated on safely and without bad results. After a preliminary treatment consisting of absolute rest in bed, with the foot of the bed elevated, careful dieting and elimination, extending over a period of about two weeks, the operation is done under spinal anesthesia. A large incision is made so as to give easy access to the field of operation, and the hernial sac, it is emphasized, must not be disturbed in any way. This, the author claims, will prevent the formation of postoperative hematomas. The sac is closed with three or four purse-string sutures. The large opening usually found in such cases is closed by means of the rectus muscle. A portion of this muscle is separated from the lateral side of the whole muscle, and its lower end or insertion into the symphysis is separated from its attachment, including the periosteum. This portion of muscle is then passed directly in front of the hernial opening and sutured to Poupart's ligament. The cord is first transplanted. In male patients over 60 years of age castration is advised. The operator may, if desired, close the defect created by the removal of a portion of the rectus muscle by a periosteal flap taken from the pubic bone, as is done in some cases of femoral hernia. An ordinary gauze-collodion bandage is applied, and the patient is kept in bed for two weeks, when healing, under ordinary circumstances, is complete. All patients operated on in this manner have done well. There has been no recurrence.

68. **Transplantation of Goiter.**—With a view to producing goiter experimentally, Pfeiffer transplanted the ordinary goitrous thyroid, and the exophthalmic thyroid into the spleen of animals, using female dogs for this purpose. The pieces of thyroid were laid into slits made in the spleen, and the hemorrhage was checked by means of sutures placed so as to avoid the piece of thyroid tissue. In four out of six cases it was possible to demonstrate the thyroid tissue in the spleen at necropsy. In two cases no remnant of thyroid tissue remained. In four cases there were prominent follicles filled with colloid material. In all the animals the pulse was increased in rapidity, and in the case of the three animals into whom the thyroid of an exophthalmic goiter was transplanted, the pulse rate was 180. In the four animals in whom the thyroid tissue was demonstrable in the spleen, the pulse rate remained high, so that the increase in the pulse rate could not be ascribed to the operation. In one case the necropsy was held 127 days after the transplantation of the thyroid tissue.

70. **Atypical Epithelial Growth.**—Stahr confirms the results obtained by Fischer in the experimental production of atypical epithelial growths, but he says that in order to obtain these results it is necessary to make use of the oils employed by Fischer, as soot, tar, xylol-paraffin, etc., failed to cause proliferation of the epithelium. Although Stahr is not prepared to accept Fischer's conclusions, he thinks that his work is a decided step in advance in the study of carcinoma, and further investigation may yield valuable results.

72. **Expulsion of Impacted Ureteral Calculus.**—After having tried all known methods to relieve a persistent anuria caused by the impaction of a calculus in the ureter, Jahr finally made use of a catheter whose tip was capped with a distensible piece of rubber, something like Nitze's ureteral occlusion catheter. The catheter was passed up to the stone, the rubber bulb was then inflated, so as to distend the ureter sufficiently to permit of the free passage of the urine around the stone, and the attempt was successful. The stone again became impacted lower down, but a resort to the same procedure again proved successful.

73. **Laughter Induced by Ophthalmoscopic Examination.**—Neustätter reports five cases, occurring in three females and two males, of reflex laughter, excited, apparently, by an examination of the eye. Every other cause for laughter was excluded, and as one of the male patients was aged 45 years, the author feels justified in ascribing the laughter to the eye examination.

74. **Argyroid Coloration of Hair.**—Ipsen describes the case of a man, whose hair was of the color usually seen in the skin in cases of argyria. The hair of all parts of the body had that peculiar grayish-brown color, with the silver gray shimmer so characteristic of silver poisoning. It was ascertained that the hair had been of this color since birth, and that the patient's mother and sister were similarly afflicted.

76. **Pentose in Urine.**—Kraft urges that every suspicious urine be examined for pentose. He employs Bial's method.

77. **Removal of Placenta.**—In order to give to the practitioner the knowledge necessary to remove a placenta properly Sellheim advises that students of medicine and young practi-

tioners practice its removal on the cow. He has found this particularly useful inasmuch as the conditions in the cow are very similar to those existing in the human female.

80. **Relations of Medulla Oblongata to Pupil.**—By means of experiments on monkeys, cats and rabbits Bach has been able to demonstrate that the reaction of the pupil to light is not affected by a decapitation, except when the medulla is destroyed as far as the fourth ventricle, when this reaction immediately disappears.

81. **Massage by Rhythmic Pressure.**—Schmidt has employed successfully a method of massage devised by Cederschiöld, of Stockholm, in which pressure supplants the usual rubbing motions. The degree of pressure varies from a very light to a very heavy pressure, and should alternate at the same sitting. It is made centripetally and the object is to remove adhesions by pressure and to exert a pump-like or suction-like action on the lymph and blood vessels. It has been found that by means of this rhythmic pressure-massage, hematomas, edema and extravasations are speedily removed. Of course, the pressure must be regulated in the individual case. It is made either with the hand encircling the part, as in the case of the extremities, or with the flat of the hand or the palm, when pressure is made on the abdomen or thorax. Schmidt has used the method succesfully after appendectomy, gallstone operations, and operations on the adnexa.

83. **Scopolamin Narcosis in Obstetrics.**—Holzbach found that when hyoscin (the author uses this word in the text and scopolamin in the title) is employed during labor, that it appears in the colostrum and in the milk during the first few days, and in the urine of the child fifteen minutes after its birth. He has not been able to ascertain as yet whether the child is affected in any way by this drug.

84. **Mesenteric Lymph Glands in Scleroderma.**—Schwerdt reports five cases of scleroderma, in which he made use of the mesenteric lymph glands of the sheep with some success. Some of the patients claimed to have felt better after the treatment, although the local condition had not changed very much. In another patient the local condition had practically disappeared entirely, although no other treatment than the glands had been employed. The functions of the patient, such as digestion, were not affected disagreeably by the treatment.

85. **Hereditary Transmission of Squint.**—In the cases reported by Sicherer, the squint was traceable through four generations of one family. The histories of the cases, and especially the ophthalmoscopic findings, are described at length.

87. **New Saccharometer.**—The instrument used by Schumm differs from Einhorn's in that the closed end becomes gradually attenuated. It is said to permit the estimation of the slightest amount of gas present, although it is more difficult to fill the apparatus with urine.

88. **New Gastric Sound.**—Gross uses the sound devised by Freund, but it is provided with end and side openings so that it can also be used as a stomach tube, and to dilate the stomach with air or fluid, if this is necessary.

92. **Diphtheritic Phlegmon of Skin.**—Ehrhardt reports four cases of a phlegmonous skin affection, from which the diphtheria bacillus was obtained in pure culture. None of the patients had faucial diphtheria.

94. **Pneumatic Cabinet.**—Kausch is very emphatic in his endorsement of the value of the pneumatic cabinet, devised by Sauerbruch, in certain operations on the thorax. He says that the apparatus can not be dispensed with, if one would avoid operative pneumothorax, and a consequent infection, nor in doing an extra-pleural pneumotomy, especially when the lung is infected. It can also be used with benefit when operating for empyema. Underpressure is preferred to overpressure.

96. **Therapeutic Use of Human Gastric Juice.**—Rosenberg had an opportunity of making use of the gastric juice of a patient suffering from gastrosuccorrhea in the treatment of two cases of achylia, two of achlorhydria, and two cases of subacidity. The man who furnished the gastric juice was neurasthenic, but otherwise entirely well, that is, so far as syphilis, tuberculosis and the condition of his organs was concerned. He yielded from 200 to 650 c.c. of gastric juice every day. It was filtered and used fresh, each patient receiving from a teaspoonful to a tablespoonful, four times daily, ten minutes before eating. None of the patients complained of nausea, or of being otherwise disagreeably affected. In most of the cases the appetite was improved and the patients gained in weight. The author, however, is inclined to view the results as identical with those obtained from the administration of hydrochloric acid.

99. **Angina and Streptococcus Septicemia.**—The case reported by Merkel was one of angina, occurring almost at the termination of pregnancy, in a woman who had cardiac disease. The labor progressed very favorably, but immediately after its termination the temperature rose and the patient presented all the symptoms of sepsis, from which she died on the eighth day. Blood cultures showed enormous quantities of streptococci. The patient admitted having had an articular rheumatism many years previously. Her first seven pregnancies had been normal. The last pregnancy was terminated naturally on the fifteenth day, after the woman's throat first became sore, and at no time during the period had a vaginal examination been made. One interesting feature of the case was a rather severe hemorrhage, of some duration, which occurred ten hours after the termination of the labor. A verrucose endocarditis was found at necropsy.

102. **Aseptic Catheterization.**—Markus presents an apparatus in which catheters can be placed for the purpose of keeping them aseptic, and from which the catheter can be inserted without necessitating any handling of the instrument. The apparatus, it is said, can be sterilized easily.

Centralblatt f. Gynäkologie, Bonn.

105 (Nos. 17-26, pp. 465-824.) *Fetal Monstrosity. (Hemitherium posterius.) Nacke and C. Benda.
106 Rudimentary Organs in Female Genital Tract. (rudimentarer Organe im weiblichen Genitaltraktus.) J. Kocks.
107 *Typhoid Occurring During Pregnancy and Puerperium. (Typhus abdominalis unter Geburt u. Puerperium.) S. Rosenfeld.
108 *New Abdominal Binder. (Leibbinde.) Alberts.
109 *New Instrument for Measuring True Conjugate. (Neues Instrument zur Messung.) Zweifel.
110 *Case of Intrauterine Cry. (Intra-uterinem Kindesschrei.) J. Richter.
111 *The Intrauterine Cry. R. Teuffel.
112 Convertible Bed for Normal and Operative Deliveries. (Operations und Entbindungsbett.) P. P. Miklaschewsky.
113 *Decapsulation of Kidney in Eclampsia. (Beh. Eklampsie m. Decapsulatio renum.) C. J. Gauss.
114 *Pubiotomy in the Home. W. Sigwart.
115 *Formation of Artificial Anus to Prevent Occurrence of Colipyelitis Following Rectal Implantation of Ureters. (Vermeidung d. Colipyelitis bei Einpflanzung d. Ureteren ins Rektum.) Krönig.
116 Acquired Occlusions of Female Genital Passages. (Erworbenen Gynatresien.) H. v. Derera.
117 *New Obstetric Forceps. (Geburtszange.) N. J. A. F. Boerma.
118 *Hernia Following Pubiotomy. (Hernien in Hebotomiespalt.) J. Hartmann.
119 Estimation of Transverse Diameter of Fetal Head During Pregnancy. (Querdurchmessers d. kindlichen Kopfes.) F. Kermauner.
120 Rudimentary Organs in Female Genital Tract. R. Meyer.
121 Permanent Widening of Pelvis by Pubiotomy. (Dauernde Beckenweiterung.) P. Wendeler.
122 Varieties of Narrow Pelvis. (engen Beckens.) E. Scipiades.
123 Id. K. Balsch.
124 *Hemorrhage at Menopause. (Klimakterischer Blutungen.) H. Meyer-Ruegg.
125 *Unexpected Results in Inoperable Carcinoma of the Uterus. (Unerwartete Heilerfolge.) F. Weindler.
126 Paravaginal Metastasis in Carcinoma Corporis Uteri. (Metastase im paravaginalen Bindegewebe.) E. Schick.
127 *Hydrorrhea Gravidarum with Extra-amniotic Development of Fetus. (Exochorialen Fruchtenwicklung.) W. T. Wiemer.
128 *Air Embolism During Labor. (Luftembolie.) K. Apfelstedt.
129 Vaginal Operation for Prolapsed Ovary. H. Rose.
130 *Metastatic Ophthalmia in Puerperium. J. Feiertag.
131 Cone-shaped Vaginal Tampon. (Zapfentampons.) L. Prochownick.
132 *Substitute for Rubber Gloves. (Gummihandschuhe.) Weder hake.
133 Treatment of Intractable Inversion of Uterus. (Inversio uteri inveterata.) C. D. Josephson.
134 Habitual Death of Fetus as Indication for Induction of Labor. (Habituelles absterben der Frucht.) E. Zurhelle.
135 Myoma of Cervix Obstructing Labor. (eingeklemmetes cervic almyom.) H. Pape.
136 *Infrapubic Drainage of Bladder. (Infrasymphysären Blasendrainage.) W. Stoeckel.
137 Accidental Injury of Prolapsed Uterus. (Verletzung d. prolapierten Uterus.) W. Hannes.
138 Refilling Uterus After Rupture of Amnion. (Wiederauffüllung d. Uterus nach Vorzeitigem Blasenprung.) Peters.

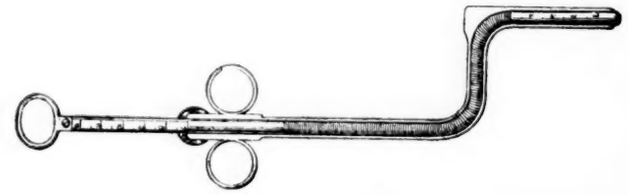
105. **Fetal Monstrosity.**—Nacke and Benda describe an extremely severe instrumental delivery of an acardius acephalus whose cutaneous and subcutaneous tissues were markedly

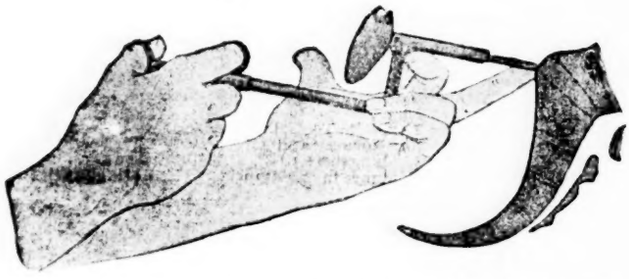
edematous. An interesting feature in the case was the fact that there existed a heart rudiment. Otherwise the specimen was in keeping with others previously described.

107. **Typhoid During Pregnancy.**—In the case reported by Rosenfeld the delivery occurred during the prodromal period or stage of the typhoid infection, complicating the diagnosis of the infectious disease very considerably. During the course of the typhoid the cardiac symptoms were so prominent as to lead the observer to suspect that the case really was one of endocarditis due to sepsis from the genital tract. Not until about the tenth day was it possible to obtain a positive Widal test, and then, too, other symptoms of typhoid were manifested. The patient went through a typical attack, but suffered two recurrences. The typhoid did not interfere with the favorable course of the puerperium.

108. **New Abdominal Binder.**—Alberts uses a bandage made of the usual elastic webbing, with a firm but adaptable back brace made of soft leather and stays. Two straps cross the chest, pass over the shoulders, again cross and button to the leather back brace. Two leather garters pass from the lower edge of the binder to the stockings.

109. **Measuring Conjugata Vera.**—Zweifel has devised an instrument for measuring the conjugata vera which appears to be simple of construction and yet very useful. It consists of a metal tube in which rests a pliable metallic spring made of





German silver, carrying at both ends a graduated scale. Figure 1 represents the instrument and Figure 2 the instrument in use.

110. **Intrauterine Cry.**—Richter reports a case in which it became necessary to do a version in order to effect delivery, and as soon as the knee of the child had passed through the vulva there was heard very distinctly the cry of a child apparently coming from within the abdomen of the woman, which was shortly followed by another in the same tones but somewhat muffled.

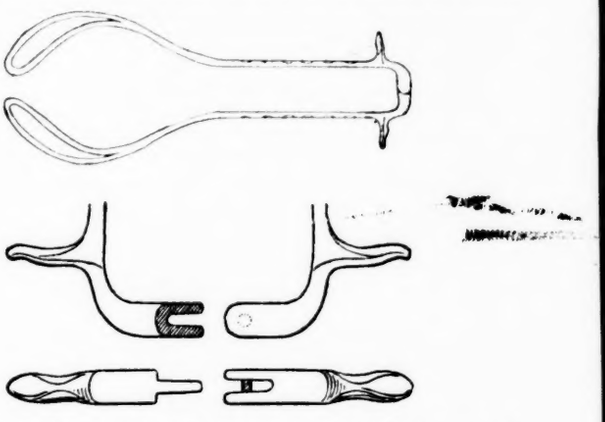
111. **Id.**—Teufel believes that the so-called intrauterine cry is caused by an inrush of air into the amniotic sac, the return of the air being prevented by the presenting part.

113. **Renal Decapsulation in Eclampsia.**—Gauss reports two cases. In one immediate improvement followed the decapsulation, while in the second case the operation was ineffective, and the patient's condition remained unchanged until after the uterus had been emptied.

114. **Pubiotomy in the Home.**—Sigwart is convinced that pubiotomy can be performed in the patient's home with equal facility and safety as in the hospital. He uses Bumm's needle and has in readiness as a precautionary measure several needles armed with catgut and gauze for tamponade. He reports five cases in which the results were all that could be wished for. Sigwart considers Bumm's needle an ideal instrument from every standpoint for performing pubiotomy.

115. **Artificial Anus in Ureteral Implantation into Rectum.**—Krönig reports a case of extensive sarcoma of the uterus, vagina, bladder and urethra in which it was necessary to transplant the ureters into the rectum. In order to prevent the occurrence of an ascending infection and a consequent colipyelitis, an artificial anus was made. Continence is said to be perfect and a clear urine is voided every two or three hours. The patient feels well and is attending to her household duties as before. No dates are mentioned, but the author says that the case is too recent a one to warrant making any positive conclusions, but thus far he believes that the result obtained warrants a repetition of the procedure in similar cases.

117. **New Obstetric Forceps.**—The forceps devised by Boerma is modeled after Naegele's instrument, but locks at the extremities of the handles instead of near the middle. The blades of the forceps are built as usual. Traction is made with one hand or both hands on the lock in the handle and on two projections, one on the outer side of each handle, as shown



in the illustrations. The instrument is intended for use in cases in which the advancing head is impacted in the pelvis.

118. **Hernia Following Pubiotomy.**—Hartmann reports a case of pubiotomy which three weeks afterward was followed by the development of a hernia during an attack of bronchitis. It was found that the bone ends were separated sufficiently to admit a finger, and that when the patient coughed the bladder protruded into the opening between the bone ends, and the intestine was forced down into the inguinal canal, a typical inguinal hernia. The bone ends were brought together and sutured, the inguinal canal was closed by a radical operation, and the patient made a complete recovery. The hernia is ascribed to the failure of the bone ends to unite.

124. **Hemorrhage at Menopause.**—Four cases are reported by Meyer-Ruegg of women who suffered considerable inconvenience from hemorrhages at the menopause. In each case the cervical canal was found to present a spindle-shaped dilatation, the apex of the spindle being directed downward. On dilating the os a considerable amount of blood, clots and shreds was poured out, and there was no further sign of hemorrhage afterward. The author suggests that all such patients be examined carefully for the cause of the hemorrhage.

125. **Inoperable Carcinoma of Uterus.**—Weindler reports three cases of inoperable carcinoma of the uterus in which a thorough curettage was done; the cavity was cauterized with the actual cautery and then swabbed with concentrated carbolic acid. The result was an unexpected one. The patients recovered from the symptoms caused by the tumors, and there has been no recurrence after five and six years respectively. The diagnosis was confirmed microscopically. The three patients are entirely well and are attending to their household duties.

127. **Extra-Amniotic Development of Fetus.**—Wiemer reports a case of hydrorrhea gravidarum in which the amniotic fluid began to empty itself a considerable time before the beginning of the labor. After the birth of the child it was found that its size was out of all proportion to the size of the amniotic cavity, so that the author took it for granted that the sac had ruptured when the fluid first began to be discharged from the vulva, and that the development of the

fetus was continued outside of the membranes. Two months elapsed between the first appearance of the fluid and the labor.

128. **Air Embolism in Labor.**—In the case reported by Apfelstedt the air embolism, which proved fatal, occurred as the result of a partial detachment of the placenta during the progress of the labor. The child was dead when delivered, and the mother died half an hour after the labor with all the symptoms of cardiac distress due to air embolism. A careful examination of the uterus failed to disclose a rupture.

130. **Metastatic Ophthalmia.**—Feiertag reports a case of metastatic ophthalmia occurring during the puerperium as the result of septic endometritis. Only one eye was affected and enucleation was advised but deferred because of the ocular pain of which the patient complained. The patient was still under observation at the time of writing, and her general condition was good.

132. **Substitute for Rubber Gloves.**—Wederhake uses an iodin-rubber solution with which he gives the hands a coating after they have been prepared in a solution of iodin one part, and carbontetrachlorid 1,000 parts. The exact composition of the iodin-rubber solution is not given, as it is said not to have been determined exactly. It is said to give a coating that is safe, effective and easily made.

136. **Infrapubic Drainage of Bladder.**—Stoeckel employs a trocar-catheter which is passed into the bladder between the pubis and the urethra, thus lying above the field of operation and not in contact with it. He uses a catheter modeled after that of Skene but made of metal, into which is passed a curved trocar.

Correspondenz-Blatt, Basel.

139 (XXXVII, Nos. 1-12.) Leprosy in Canton Wallis. (Lepra.) Jadassohn and A. Bayard.
140 Localization of Aphasia. (Aphasie.) H. O. Schlub.
141 *Lumbar Puncture in Persons Mentally Affected. (Geisteskranken.) E. Fankhauser.
142 Leprosy in Canton Wallis (Concluded). Jadassohn and A. Bayard.
143 *Subcutaneous Ruptures of Liver. (Subkutane Leberrupturen.) P. Schönholzer.
144 Determination of Viscosity of Blood. (Viskosität.) W. Hess.
145 Id. K. Kottmann.
146 *Two New Instruments. K. Köhl.
147 The Physician and Lodge Practice. (Krankenversicherung.) Häberlin.
148 Early Diagnosis of Pulmonary Tuberculosis. (Frühdiagnose.) G. Rheiner.
149 Accident and Sick Insurance. (Kranken- u. Unfallversicherung.) A. Jaquet.
150 Progressive Paralysis and Syphilis. F. Ris.
151 Early Diagnosis of Pulmonary Tuberculosis (Concluded). G. Rheiner.
152 *Distension Ulcers in Obstruction of Intestine. (Dehnungsgeschwüre. W. Zimmermann.
153 Progressive Paralysis and Syphilis (Concluded). F. Ris.
154 Trichocephaliasis. R. Kahane.
155 *Curability of Gastric Cancer by Surgery. (Heilbarkeit d. Magenkrebses.) T. Kocher.
156 Carcinoma of Body of Uterus. (Corporis Uteri.) Widmer.
157 Hematoma of Ear. (Othematom.) Seiler.
158 Etiology and Treatment of Typhoid. W. Silberschmidt.
159 Dosage of Digalen. K. Kottmann.
160 Visceral Changes Due to Spinal Curvature. (Verkrümmungen d. Wirbel säule.) J. Karcher.
161 *Veronal Poisoning. (Vergiftung.) E. Nienhaus.
162 Witzel's Drop Method of Producing Ether Anesthesia. (Aethertropfnarkose.) Arnd.
163 Visceral Changes Due to Spinal Curvature (Concluded). J. Karcher.

141. **Lumbar Puncture in the Mentally Affected.**—Fankhauser reports on the examination of the cerebrospinal fluid in the case of 67 persons suffering from disturbances of the nervous system. Among these there were 35 cases of paralysis, 21 of dementia præcox, 8 of epilepsy, 4 each of congenital dementia, alcoholic disturbances and senile psychoses, and one case of postapoplectic dementia. This study included the estimation of the pressure of the fluid, its macroscopic and microscopic appearances and its albumin content. The findings of the author are in accord with those of other observers, who believe that the procedure is of some diagnostic value. It possesses no therapeutic worth.

143. **Ruptures of Liver.**—Schönholzer discusses the clinical history of subcutaneous ruptures of the liver, and reports one case, that of a man who was caught between two freight cars. Although the patient suffered intensely from symptoms of a severe internal hemorrhage, he was able, with some assistance, to seek medical aid at a distance of about a quarter of a mile. The physical findings pointed to an injury of the liver, and a laparotomy was done immediately. A large jagged tear was found in the liver, from which an enormous hemorrhage had taken place. A sterile compress was forced into the tear to check the hemorrhage, and the peritoneal cavity was freed of the accumulated blood—about two quarts. The rupture of the liver was almost complete, and as its size precluded suture, the portion to the left of the rupture was removed. A number of blood vessels were ligated, and the edges of the tear were brought together with sutures. In order to support the liver it was sutured to the parietal peritoneum. The resected liver mass weighed 320 grams, and measured 16 cm. by 10 cm. The patient slowly recovered and two months after the operation appeared to be none the worse for the injury.

146. **New Instruments.**—One of the instruments devised by Köhl is an angiotrypsic forcep to be used on the appendix, and the other is a curved sound, to be used in inverting the hernial sac in Kocher's operation for hernia. The end of this sound is grooved like a Kocher's director, and serves as a point of resistance and a guide when making the buttonhole in the end of the sac.

152. **Distension Ulcers.**—These ulcers, which Zimmermann saw in three cases, are said by Kocher to be the result of disturbances in the circulation of the bowel, caused by an enormous distension of the intestine, such as often occurs above an occlusion. The three patients whose cases are reported were the victims of carcinoma. One patient had carcinoma of the sigmoid flexure, the second had carcinoma of the descending colon, and the third had carcinoma of the left ovary, which occluded the rectum at its commencement. In the first case Zimmermann assumes that the ulcer was caused by pressure of hardened masses of feces, there being only one ulcer in the immediate vicinity of the occlusion. In the remaining two cases there were many ulcers of varying size and depth, situated at some distance from the occlusion. In these cases Kocher's theory of the formation of these ulcers probably is the correct one. Zimmermann points out that the diagnosis in such cases is extremely difficult. The prognosis is always grave, and the treatment operative.

155. **Surgical Treatment of Carcinoma of Stomach.**—Kocher has done resection of the stomach 122 times, 25 times since the last report on patients operated on before September, 1904. In these 25 cases (24 gastric cancers, 1 gastric ulcer) there were only four deaths, a mortality of 16 per cent. These deaths occurred in cases that were very far advanced, and in which the operation was undertaken with the sole hope of according relief from distressing symptoms. Kocher discusses briefly the necessity of early diagnosis, and reviews the conditions on which such a diagnosis is dependent. One of his patients is alive and well 19 years after the operation, another 10 years after, three patients 8 years, one patient 7 years, one 6 years after the operation, and three patients 4 years after the operation. Including all patients operated on, according to Kocher's method, there are only 14 fatalities out of 92 cases, a mortality of 15.2 per cent.

161. **Veronal Poisoning.**—Nienhaus reports the case of a woman who took four grams of veronal with suicidal intent. One hour after taking this dose she lost consciousness and remained in this state for almost twenty-four hours, when she regained periods of consciousness. The recovery of the patient was protracted, stretching over a period of about two weeks. On the day following the ingestion of the veronal, the patient passed 100 c.c. of urine, which on examination was found to contain 0.1 gram of veronal. The symptoms observed in this case were typical, resembling those of uremia. A notable feature in this case was the prolonged convalescence.

Gazzetta degli Ospedali e delle Cliniche, Milan.

164 (XXVIII, Nos. 37-84.) Stenosis of the Pylorus from Diaphragmatic Hernia. (Stenosi acuta del piloro da ernia diaframmatica.) P. Conti.
165 Tuberculosis of Alimentary Origin. (Sulle tuberculosi di origine alimentare.) A. Bonome.
167 *Studies on the Gonococcus. (Studii sul gonoc.) A. Bruschettini and L. Ansaldo.
168 *Pleural Autoserotherapy. (Autoseroterapia pleurica.) E. Jona.
169 An Improvement in Eosin Staining. Use of Methylene Blue for Neurodiagnosis and Clinical Cytodiagnosis. (Un perfezionamento nella tecnica della colorazione coll' eosina, bleu di metilene.) C. Minerbi.

170 Hydrocele in the Female. (Studio dell' idrocele muliebre.) G. Polini.
171 Closing Lecture of the Course at the Medical Clinic for the Year 1905-6. (Lezione di chiusura al corso di clinica medica 1905-6.) E. Maragliano.
172 Essential Paroxysmal Tachycardia. (Sulla tachicardia par. essenziale.) G. Bacelli.
173 *Agglutination of Koch's Bacillus in Relation to the Theory of Unicism. (Agglutinamento dell bacillo di Koch in relazione colla teoria di unicismo.) C. P. Goggia.
174 Biologic Studies on the Exanthemata—Demonstration of Bacterial Antibodies in the Blood Serum of Patients. (Ricerche biologica sulle malattie esantematiche—Dimostrazione di anticorpi bacterici nel siero di sangue di soggetti.) S. Livierato.
175 Stovainization of Spine. (Rachistovainizzazione.) U. Gironi.
176 Severe Case of Osteomalacia Cured by Adrenalin Injections According to Bossi's Method. (Osteomalacia guarita con le iniezioni di adrenalina il metodo Bossi.) De Tanaurri.
177 Rheumatism and Chorea. (Reumatismo e corea.) E. De Renzi.
178 *Tuberculosis of Alimentary Origin. (Sulla tuberculosi di origine alimentaire.) G. Bonome.
179 The Puerperium and Tuberculosis. (Puerperio e tuberculosi.) G. Carli.
180 *The Immunizing Action of the Cerebral Substance of Various Animals. (Sulla azione immunizzante della sostanza cerebrale di vari animali.) C. Fermi.
181 The Liver and Heterologous Albumin. (Fegato et albumine heterologiche.) E. Sylvestri.
182 *The Caustic Action of Chlorohydrate of Quinin. (Contributa all'azione caustica del cloridrato di chinino.) E. Sylvestrini.

167. **Studies on the Gonococcus.**—Bruschettini and Ansaldo report encouraging results from their experiments in the culture of gonococcus. They used media containing blood and white and yolk of egg. The virulence of the germs was also markedly increased, and they report, without going into details, which are promised in a future memoir, that they have succeeded in obtaining an aggressin from the gonococcus which not only shortens the incubation period of the disease, but also causes death when injected in a culture that by itself would be incapable of producing this result in the animal.

168. **Autoserotherapy.**—Without being able to reproduce such brilliant results as those claimed by Gilbert with his method of autoinjection of pleuritic fluid into the patient's subcutaneous cellular tissues, under aseptic precautions, Jona finds the method worth employing in exudative pleurisy, especially in cases of recent date. He tabulates 15 cases thus treated, in which the time required for absorption of the fluid varied from six to thirty-four days. The number of injections varied from one to four. Nine were cases of tuberculous pleurisy; one case was traumatic. The cases longest in reabsorption were all of some standing and resistant to other treatment. In all save two the injections were followed by a marked increase in the urinary excretion, excitation of which seems to be the method of their action.

173. **The Unity of Tuberculous Infection.**—Goggia has tested the agglutinating power of the sera of various animals, dogs, guinea-pigs and rabbits, with also that of man, on the tubercle bacilli of the disease in the same and other species, using cultures as nearly as possible identical, as regards the number of bacilli to each unit of volume, and employing all due precautions as to exactness of comparison. The results are given in tabulated form and support the view that the germs, while modified by the environment, are practically identical in the different species.

178. **Tuberculosis of Intestinal Origin.**—From his clinicopathologic observations, covering about 129 autopsies of cases with tuberculosis of the alimentary tract and his experimental studies, Bonome concludes that tuberculosis infection may originate in the alimentary tract in a considerable proportion of cases. In nearly 17 per cent. in his autopsies of tuberculous patients the primary infection was in the alimentary tract, usually in the intestine or the mesenteric annexes, and much more rarely in the upper tracts, the mouth, pharynx, esophagus, etc. In experimental oropharyngeal infection in animals the rapid involvement of the submental, submaxillary and cervical lymphatics was noticeable, and the bronchial glands and lung are later involved. In experimental aerial infection the bacilli were almost always arrested in the nasal, buccal or pharyngeal mucosa, and reached the air passages only with difficulty. Infection of the upper digestive tract is, therefore, to a certain extent the same as infection by inhalation. In most cases of undoubted primary alimentary tract infection there was also found at autopsy an acute miliary eruption in the lungs (hematogenous infection) and sometimes also a lymphogenous nodular peribronchial infection. Autopsies affording opportunity to observe infection absolutely limited to the intestine or mesenteric glands are rare. The tubercle bacillus does not lose its virulence by arrest in the mesenteric glands. Primary intestinal tuberculosis is most frequent in infants and in children up to 16 years of age, in whom it reaches the proportion of 23 per cent. of all cases. Between 16 and 55 it constitutes 16 per cent., and is rarer still in the aged, in whom Bonome finds it in only 6.25 per cent. No difference was observed in the intestinal lesions according to age, but those in the mesentery were usually more severe in the young than in the aged. The alterations of the mesenteric glands consist in a primary hyperplasia with secondary caseous degeneration, a point of some importance in so far as it indicates that the infective agent, the bacillus, reaches the glands by way of the chyliferous apparatus. The primary intestinal lesion is not always discoverable at autopsy, but in Bonome's opinion this does not necessarily support Behring's contention that the bacillus may penetrate the intact intestinal walls, especially in infants. He is more inclined to recognize the possibility that the primary microscopic lesions may heal without leaving traces. The local lesion, in his experiments, varied in severity according to the condition of the virus and the species of the animal experimented on. Similar variations probably occur also in the spontaneous infection in the human species.

180. **The Immunizing Action of the Cerebral Substance.**—In this preliminary communication Fermi states the results of experiments made to ascertain more particularly the special substances to which are due the immunizing action against rabies, previously demonstrated by him to be shown by the cerebral substance of rabbits, dogs, sheep and cattle. He finds in these later studies that the immunizing effects of the normal nervous substance varies according to the species from which it is derived. The lipoid substance possesses in varying degree a certain immunizing action against rabies, but always inferior to that of serum and antirabic vaccine. Cholesterin and lecithin, however, are not endowed, according to his experiments, with the lyssacidal action claimed for cholesterin by Almagia, nor do they possess any bactericidal power, so far as shown by these experiments.

182. **Chlorohydrate of Quinin as a Caustic.**—Sylvestrini has employed chlorohydrate of quinin in a number of cases of phagedenic ulceration, neglected wounds, whitlow, etc., with excessive granulations, with excellent results. He finds it a valuable substitute for nitrate of silver; it has a profoundly caustic effect without the discomfort to the patient caused by the silver application.

Books Received

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interests of our readers.

SECOND ANNUAL REPORT OF THE NATIONAL FIRST AID ASSOCIATION OF AMERICA. Paper. Pp. 66. 6 Beacon St., Boston, Mass., 1907.

HYGIENIC LABORATORY BULLETIN No. 38. Influence of Antitoxin in Postdiphtheritic Paralysis, by M. J. Rosenau and J. F. Anderson. Paper. Pp. 34. Washington: Government Printing Office, 1907.

THIRTY-THIRD ANNUAL REPORT of the Secretary of the State Board of Health of the State of Michigan for the Fiscal Year Ending June 30, 1905. By Authority. Cloth. Pp. 214. Lansing, Mich.: Wynkoop, Hallenback Crawford Co., 1906.

PRACTICAL TREATISE on Fractures and Dislocations by Lewis A. Stimson, B.A., M.D., etc., Professor of Surgery in Cornell University Medical College, New York. Fifth Edition, Revised and Enlarged. Illustrated. Cloth. Pp. 847. Price, $5.00. New York and Philadelphia: Lea Bros. & Co., 1907.

MANUAL OF CLINICAL DIAGNOSIS by Means of Microscopic and Chemical Methods for Students, Hospital Physicians and Practitioners, by Charles E. Simon, B.A., M.D., Professor of Clinical Pathology at the Baltimore Medical College. Sixth Edition, Thoroughly Revised. Illustrated. Cloth. Pp. 682. Price, $4.00. Philadelphia and New York: Lea Bros. & Co., 1907.

TEXT-BOOK OF PHYSIOLOGIC CHEMISTRY for Students of Medicine and Physicians. By Charles E. Simon, B.A., M.D., Professor of Clinical Pathology at the Baltimore Medical College. Third Edition, Thoroughly Revised. Cloth. Pp. 490. Price, $3.25. Philadelphia and New York: Lea Bros. & Co., 1907.